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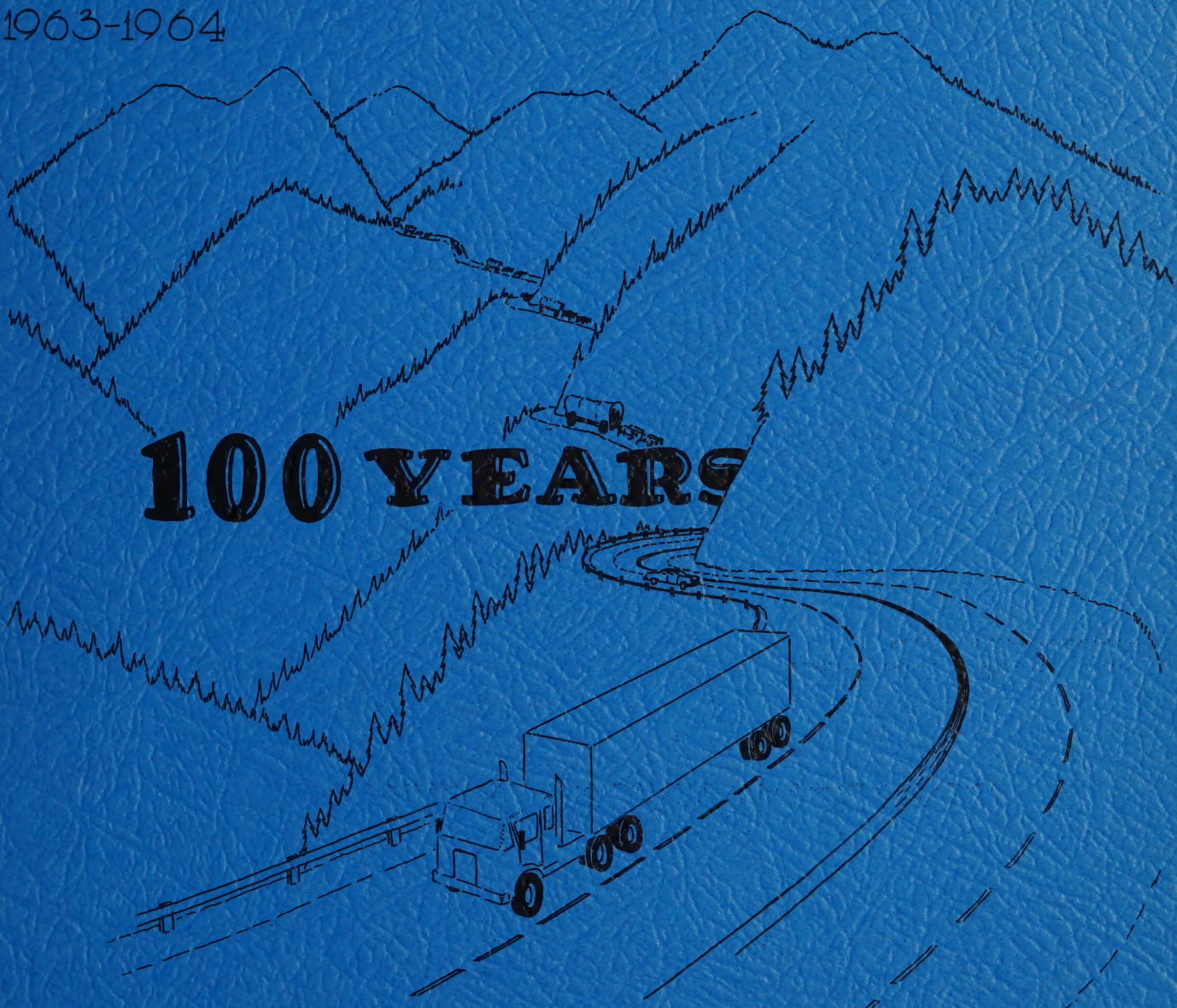
SUPPLEMENT TO THE 24th BIENNIAL REPORT

FISCAL YEARS
1963-1964



DEPARTMENT OF HIGHWAYS

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STATE OF NEVADA

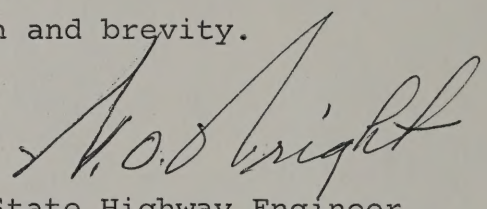
TWENTY-FOURTH BIENNIAL REPORT

FISCAL YEARS 1963-1964

DEPARTMENT OF HIGHWAYS

To the Honorable Members of the Board of Directors
Nevada Department of Highways
and the Nevada State Legislature

This booklet is being submitted as a supplement to the 1963-1964 Biennial Report. This supplement provides a more detailed description of Department activity including charts and tables omitted from the Biennial Report for the purpose of simplification and brevity.



State Highway Engineer

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NEVADA HIGHWAY DEPARTMENT
ORGANIZATION CHART

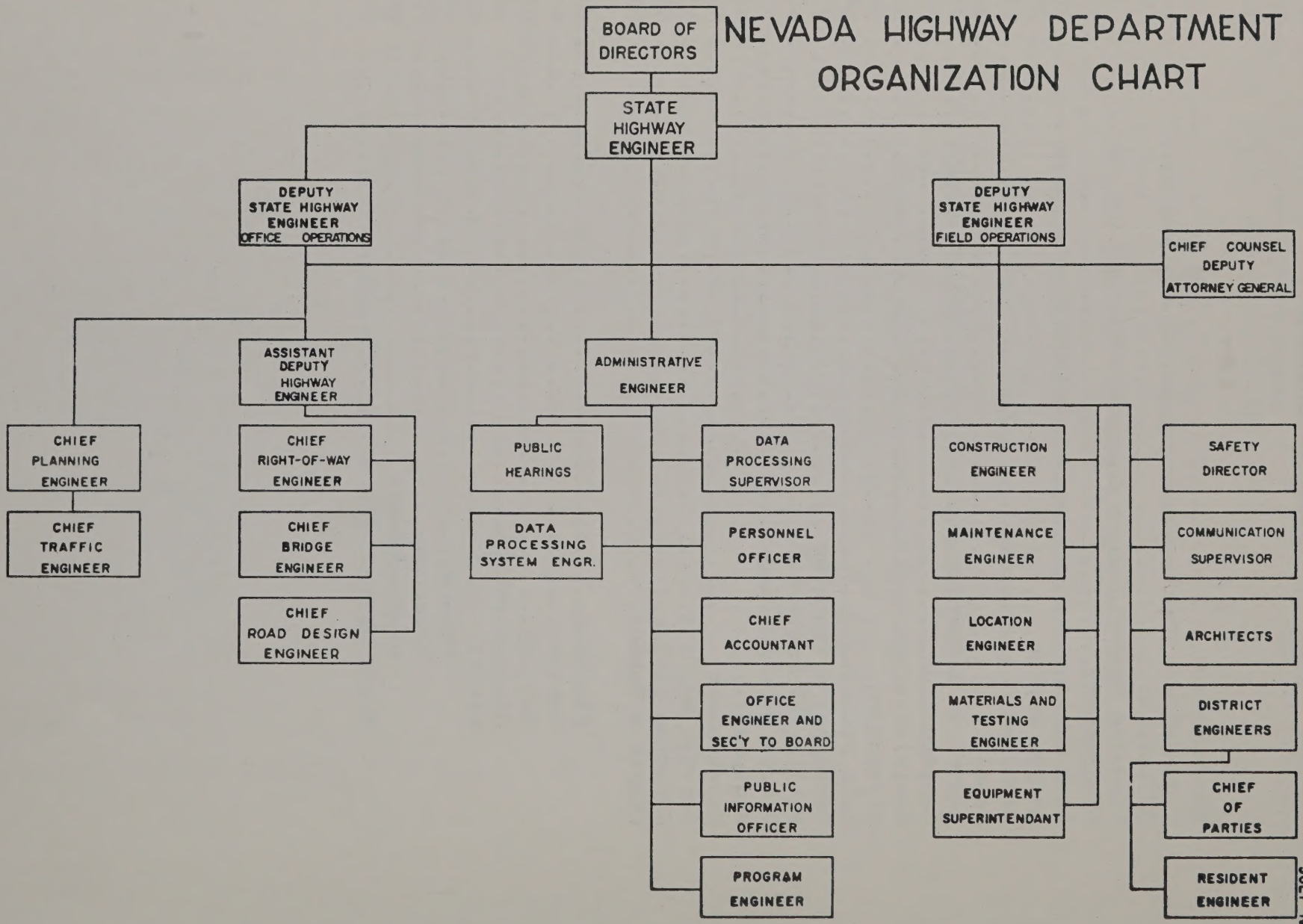

FIGURE I-101.2
JULY 1962

ADMINISTRATIVE OFFICIALS

Board of Directors

Grant Sawyer, Governor	Chairman
Harvey Dickerson, Attorney General	Member
Keith Lee, Controller	Member

Department Heads

W. O. Wright	State Highway Engineer
R. E. Eldredge	Deputy Highway Engineer
John E. Bawden	Deputy Highway Engineer

Division Heads

A. G. Kinne	Asst. Deputy Highway Engineer
D. H. Hays	Administrative Engineer
Leonard I. Lindas (Apptd. 9-30-64)	Administrator, Division of Legal Services and Right of Way
O. W. Walker	Chief Road Designer
E. T. Boardman	Chief Bridge Designer
Orvis Reil	Chief Planning Survey Engineer
James T. Wallace	Chief Right of Way Engineer
Robert J. Potter	Chief Counsel
Frank Quilici	Highway Equipment Superintendent
Victor W. Clyde	Maintenance Engineer
G. K. Woolverton	Construction Engineer
L. W. Little	Chief Testing Engineer
W. H. Gibson	Location Engineer
Ralph J. Ottini	Traffic Engineer
Stanley D. Sundeen	Office Engineer
Henry L. Clayton	Personnel Officer
George E. Smith (Apptd. 7-8-64)	Training Officer
Clarence S. Eiche	Chief Accountant
William F. Engel	Public Information Officer
Donald L. Bowers	Editor, Highway Magazine
Joseph A. Moore	Safety Director
Remo Albertini	Supervising Internal Auditor
Curtis Foltz	Engineer Data Processing Supervisor
J. J. Quinlan	Chief Storekeeper
Gilbert DeBard	Highway Communications Supervisor

Cont.

District Engineers

Jack Parvin, District Engineer	District One, Las Vegas
Vernon Sharp, Asst. District Engineer	District One, Las Vegas
Owen Joseph, Asst. District Engineer	District One, Las Vegas
M. J. Colletti, District Engineer	District Two, Reno
A. A. Howard, Asst. District Engineer	District Two, Reno
Paul E. Robbins, District Engineer	District Three, Elko
Henry H. Mayer, Asst. District Engineer	District Three, Elko
Edward Marriage, District Engineer	District Four, Ely
C. L. Brown, District Engineer	District Five, Tonopah
Dale V. Rose, District Engineer	District Six, Winnemucca
Joseph Souza, Asst. District Engineer	District Six, Winnemucca

PLANNING

Planning activity continued to expand during the past two years. New operational areas were added and several of the old ones increased in size.

As in the previous biennial period, planning included such activities as road inventory, mapping, photogrametry, geodesy, traffic, road life, highway finances, special studies, and aerial reconnaissance. To these functions were added systems analysis and programming, and flight operations.

The third cycle of statewide road and street inventory was undertaken during the biennium. Nearly 4000 miles of roadway on the state's primary and secondary systems were rated for condition, safety and service.

New county and city maps were prepared, traffic flow maps produced, and a revised general state map published by the mapping section.

For special studies, the past biennial period proved a peak one. As part of an urban transportation study, home interviews for the origin and destination of motorists in the Truckee Meadows region were conducted. The 1958 tourist survey was updated by a similar study made in 1963. Special O-D studies also were held for traffic at Hoover Dam and at Stateline, Lake Tahoe.

The planning process also expanded to include urban transportation. An engineer was hired to organize this activity on a cooperative basis with city, county and regional planners.

INVENTORY

The third cycle of road inventory was in progress throughout the biennium with one party of two men devoting full time to the project.

City street mapping inventory was kept current in incorporated cities and in unincorporated towns of 1,000 or more population. Log notes were coded for IBM tabulation for use in mapping and statistical projects.

The following road logs were compiled:

1. Federal-aid Highway System, comprising the Primary State Highway System.

2. Federal-aid Secondary System

3. Non-Federal-aid State Routes

4. U. S. Route and Alternate Routes

5. Federal Forest Highway System

6. Status of Road Systems

The inventory section was responsible for the preparation of semi-annual tabulations of mileage and cost distribution on the Federal-aid Secondary System. This section also was responsible for continuing the Department's sufficiency rating study. This survey provides a check list of actually existing road conditions as compared with current design standards. The study is a continuing one on road deficiencies and inadequacies and provides a guide for construction priorities. Traffic volumes warranting, substandard sections of road may be segregated and studied for programming. The data obtained from the study contribute much to the State Highway Department in the preparation of a system of priorities for construction, reconstruction, and maintenance, based on actual physical needs. It provides legislative representatives and the general public with a readily understood and yet scientific approach to the over-all highway problem.

During the biennium the Sufficiency Rating Study included the Federal-aid Secondary as well as the Federal-aid Primary System. Urban areas of 5,000 population were excluded. Over three thousand (3,912) miles of roadway were rated for condition, safety, and service.

Cont.

The Inventory section has been made responsible for the gathering, compiling, and coding of street and road information for the Truckee Meadows Urban Transportation Study and the Las Vegas Area Urban Transportation Study.

The Inventory section prepared a manual that will be used by the interested agencies on the study areas. The manual will provide a fairly complete catalogue reflecting the physical features and the service demands placed on each street or road in the study area. It is intended to show how to complete the inventory form and is composed of two parts.

Part I is the recording of data as gathered and Part II is the coding of this information in preparation for IBM usage.

ROAD LIFE

The prime objective of the Road Life section during the biennium was to keep current records of the physical aspects and their changes on all state-interest roads. This involved the compilation of factual data on length, width, surface type, year of construction, improvement and retirement records, and cost studies.

The following publications and reports were compiled on an annual basis to distribute information concerning the status of state-interest roads:

RL-7 Reductions
Control Section Index
Control Section Index Maps
Federal-aid Secondary Descriptions
State Mileage Tables
Interstate System Traveled-way Study
Maintenance Cost Study

The last of these, the Maintenance Cost Study, is a new report required by the Bureau of Public Roads. The first submission of this report was sent to the Bureau on August 20, 1964, and covered the 1963-64 fiscal year. This report shows the maintenance costs of specific maintenance functions on selected sections of the completed Interstate Highway System, along with the physical characteristics, location and construction and reconstruction costs. These costs are shown both on a yearly basis and a cumulative basis for historical comparisons. The study will be enlarged to incorporate urban sections of the Interstate Highway System upon completion of the same.

MAPPING

With the rapid growth of all activities in the state the need for maps expanded. To meet the demand the Mapping section prepared and published many types of maps and related material:

General highway maps for Nye County (published)

City maps of Carlin, Elko, Ely, Gabbs, Wells, and Winnemucca (published)

Urban area maps for Las Vegas and North Las Vegas (published)

State traffic flow and traffic station maps for 1962 and 1963 in two-color reproduction (published)

Nye County traffic flow maps in two-color reproduction (published)

Traffic maps of the cities of Carlin, Elko, Ely, Gabbs, Wells and Winnemucca in two-color reproduction (published)

A general highway base map of the state (published)

A detailed general highway map of the state (nearing completion)

General highway maps for Washoe, Ormsby, Douglas and Storey counties

A new series of 15 minute quad maps at an enlarged scale to cover the congested areas in the aforementioned counties (nearing completion)

Work was not entirely confined to regular cartographic maps. Many types of reports were completed, including maps for the Sufficiency Rating Report; Control Section Maps; Impost Graphs; Engineering District and Maintenance Station Maps; Sketch maps for proposed Federal-aid Secondary and Primary Routes' Federal-aid Fund Graphs; Detour and Construction Bulletins; Interstate Progress Charts; and many other types of charts, graphs, and maps for other divisions of the Department and for public relations purposes. In addition, material was prepared and technical advice given to other agencies in the state. Cont.

Wall maps at a scale of 2 miles to the 1 inch were prepared for District Offices 1, 3, 4, 5 and 6. These maps were reproduced on film and consisted of several sections of maps to form the district involved. A new technique was developed by the Mapping section for mounting these maps as well as for using plexiglass tabs in various colors for illustrating various items of information on the map. A wall map for District 2 will be similarily prepared as soon as Washoe, Storey, Ormsby and Douglas county maps are published.

Display material such as color slides and maps were prepared for presentation to officials and citizens during public hearings on proposed new highway construction.

Aerial photo mosaics and plans for aerial contract bids were completed. These mosaics received wide use in design planning, as part of the highway presentations made in the many public hearings held, and in displays for public relations and for use by other state agencies.

Because of the accelerated highway program the Mapping section developed new techniques in drafting and cartography. They also utilized new developments in the drafting and reproduction fields and conducted research and experiments which increased productivity.

Because of this development and research, the Mapping section has been instrumental in introducing faster and better methods of drafting and reproduction to other divisions of the Department.

TRAFFIC

The collection and assembly of traffic volume information for streets and highways throughout the state has continued to be an important feature of planning activities. The statistical traffic data derived has been of prime importance to all sections of the Highway Department and also served many other state agencies and the general public.

During the biennium, the key traffic counting sites were increased to a total of forty-one locations in order to better evaluate, on an hourly and daily basis, the 1500 additional statewide counting sites where traffic is counted on a regular and continuing short-time basis.

Traffic studies continued on the development of annual daily traffic values for all rural roads and city streets throughout Nevada. During the past two years traffic values were updated in Churchill, Douglas, Esmeralda, Lyon, Mineral, Ormsby, Pershing and Storey counties.

Public hearings continued to be an important phase of the Planning Division's part in preliminary engineering and route investigation procedures. Several hearings were held throughout Nevada for Interstate, Primary, and Secondary routes to inform the public of proposed construction plans. Traffic conditions were included in all presentation material so that interested business concerns and individuals could be properly informed of the reasons for certain types of design proposed for construction.

As a portion of the continuous phase of the Traffic section published reports of activities, the Annual Traffic Report was compiled with its current annual information on all state-interest roads, and the Tabulation of Annual Traffic Census with its ten years of 16-hour July traffic at over 100 key sites throughout the state was completed and distributed each year.

Numerous special traffic studies and investigations were conducted throughout the state for the determination of traffic signal justifications, and a considerable number of other special traffic studies and investigations of a technical nature also were completed.

SPECIAL STUDIES

This biennium proved to be the busiest two years yet experienced by the Special Studies section. The continuing urban transportation study for Las Vegas Valley and the Truckee Meadows area necessitated adding three more men to the staff.

A comprehensive home interview type origin and destination study and other allied studies associated with the urban planning study for the Truckee Meadows area were undertaken during the latter part of the biennium and various activities involved in the continuing process will continue for many years to come. This section has been, and will continue to be involved in the many phases of updating and reviewing recommended street and highway planning programs resulting from the studies and discussions with city, county, state and federal agencies participating in the program.

Updating the comprehensive 1958 out-of-state Visitor Survey was undertaken in 1963 and involved a complete new statewide origin and destination study with supporting data collected by the University of Nevada and the Department of Economic Development on visitors arriving by air, train, and bus. Completion of the report was delayed due to the time spent on the previously mentioned urban transportation studies.

Personnel from this section prepared data for exhibits and reports to be used at numerous public hearings on sections of Interstate 80. A representative from Special Studies participated as a panel member with other highway staff members presenting the Department's views and findings to the public at the formal hearings.

Reports were compiled providing economic justification for freeway line selection ramps, and grade separations on the Interstate System. In isolated cases justification also was provided for change order requests by resident engineers where additional construction money was required.

Demands for information required in the Interim Guide for Flexible Structures and requested by the Design Division continued heavy due to the large number of contracts awarded during the past two years.

Personnel of this section also were involved in work connected with the 104(b)5 revised Interstate cost estimate required by the Bureau of Public Roads.

Cont.

An origin and destination study was conducted on U.S. 93 in the vicinity of Hoover Dam. Data will be analyzed to determine what steps will be recommended by the State Highway Department for alleviation of traffic congestion at the Dam.

Analysis of the traffic problem at Stateline, South Lake Tahoe, also is underway. Data on origin and destination study will be used for interchange locations to determine the number of lanes required and provide other supporting data required to locate a new highway facility of the type proposed.

Work continued on the Interstate Accident Study Test section required by the U.S. Bureau of Public Roads. The study includes detailed reporting of accidents that occur each calendar year within the boundaries of the test section. Records of reported accidents occurring within the state are micro-filmed at the end of each year for use by the Planning Survey Division, Internal Auditing Division, and others having use for highway accident statistics. No formal report on vehicle accidents is compiled as yet.

Annual studies were carried on as usual, namely: loadometer and speed studies. Special information on trucks and vehicle classification counts were required by the U.S. Bureau of Public Roads as part of the loadometer studies.

Requests for speed studies to determine need for speed control areas were honored. Recent acquisition of a radar speed-timing apparatus allows the Planning Division to conduct these studies at a much lower cost than was possible using the old, out-moded equipment.

Data on tourism was provided by this section.

GEODETIC

During the current biennium the Geodetic section was active in the following fields:

1. County Mapping

Complete map control and traverse was supplied to the Cartographic section for the following counties: Washoe, Storey, Ormsby, Douglas and Clark.

2. Aerial Surveys

Vertical and/or horizontal control was supplied to the Photogrammetric section for the following contracts: ASC 16, ASC 17, ASC 18, ASC 19 and ASC 21.

Aerial contractor's supplementary control was checked on each contract and the section assisted in sheet checking map sheets on ASC 16, ASC 17 and ASC 19.

3. Interstate

All current alignments on both Interstate 15 and 80 have been correlated to the USC & GS control along the Interstate System and all data is now available on the Nevada Grid System.

4. Reno Area

All previous existing control in the Reno-Sparks Valley area was adjusted into the control for ASC 19. This includes all consultant work in the area as well as previous ASC projects. All values were modified to a ground based grid for the area. This data was published in book form.

Considerable effort was expended on assisting in coordinating various construction with the existing control in the Reno-Sparks area.

5. Lake Tahoe

At present this section is working closely with the Location section in establishing control on present improvement on U.S. 50 from Stateline to Sponners Summit.

6. Geodetic Programing

The following major IBM 1620 programs were developed over this period:

Cont.

1. Expanded Electrotape Program
2. Geodetic Position, Inverse and State Coordinate Program
3. Lease Square Adjustment for Geodetic Traverses
4. Least Square Adjustment for Quadrelateral Computations

7. Miscellaneous Projects

Many short duration projects were executed such as county line research and position development, line of sight problems, level and bearing checking, etc.

8. General Planning Function

This section was instrumental in the modification of existing computer programs and development of new programs for the traffic and road life section.

9. Urban Transportation

In this field there were approximately twenty-five major programs developed, or modified from existing programs, for the observation, simulation and distribution of traffic in an urban area.

PHOTOGRAMMETRY

During this biennium three aerial contracts were checked and approved, providing topographic maps for design and alternate route study of 36.9 miles of freeway alignment on Interstate Routes 15 and 80.

One aerial contract, providing 32 square miles of reconnaissance topographic mapping for preliminary location and route study of 10 miles of alignment of U. S. Highway 50 in the Lake Tahoe area of Douglas County, was checked and approved.

Checking of two aerial contracts providing topographic mapping for design of 25.2 miles of Secondary highway alignment in the Truckee Meadows area and 7.1 miles of freeway alignment on Interstate Route 80 was 85 percent complete at the close of the biennium.

The section furnished photogrammetric materials and services as required for the operation of the Department.

FINANCIAL

Monthly publications during the biennium included tables and graphs on Motor Vehicle User Revenues and Vehicle Registrations, comparative calendar and fiscal year tables and graphs for previous years.

Reports were made on fiscal year financial operations of local governmental units below state level in connection with streets and allied street functions, such as street lighting, parking meters, storm sewers, and off-street parking. Included were debt service for all indicated types of functions and expenditures by all agencies providing funds for streets and roads. A yearly publication "Nevada Highway Department Factual and Statistical Information" was initiated and published.

Liason between the Department of Motor Vehicles and the Nevada Highway Department on matters relating to revenue and operations including ports-of-entry was continued on a yearly basis.

Program Evaluation Review Technique (PERT) which was studied in conjunction with members of administrative staff becomes effective on a Project Schedule Control January 1, 1965. Further study is necessary to relate cost scheduling and budget control.

A broad review of the Department's financial status, present and anticipated, which is used in considering improvement of the operation of the Department, was and is carried out as a continuing study. This also is expanded to budget forcasting on a functional base related to objective base. Projections are thus developed on a long range program.

SYSTEMS ANALYST AND PROGRAMMER

This section was inaugurated during the latter part of 1963. It was created to meet the tremendous increase in demand from the Planning Survey Division for data processing in the IBM Division.

This section coordinates activity between the various Planning Survey sections and the IBM Division, develops detailed system analysis concerning flow of work, produces and checks computer programs and accompanying operator instructions, and is currently engaged in work on urban transportation studies to be used to forecast future traffic volumes in various cities throughout the state.

The section head represents the Planning Survey Division of the Highway Department IBM Steering Committee, and serves as the Division Coordinator for Planning Survey for the Highway Department PERT program.

FLIGHT OPERATIONS

During the biennium aerial reconnaissance in the Department of Highways showed a steady increase of activity, and the scope of this operation was broadened considerably.

One of the prime factors was the increased use of aerial photography and mosaic compilation for the purpose of public hearings. Current aerial photographs proved quite successful in the role of portraying proposed routing and alignment with relation to property and topography involved. Numberous areas were flown. The mosaics compiled and displayed throughout the state were favorably accepted by the general public.

Design Division personnel contributed also to the growth of aerial reconnaissance with a continued increase in the demand for current aerial photographs. Many hundreds of pictures were taken for the purpose of studying alignment, drainage areas, and topography.

Location found an increasing need for aerial photos as an aid in determining the most feasible and desirable routing for proposed new highways.

Planning Survey used numerous high altitude aerial photographs for map-making and for establishing current street patterns in widely scattered communities.

Right-of-Way was a big user of aerial photography. In addition to the use of vertical photography in the study of controversial property evaluation, it is important to note that the Right of Way Division's found an ever-increasing demand for aerial obliques. The oblique photographs were used in condemnation suits and proved their value in court on many occasions.

Public Relations used an increasing number of aerial photographs in informing the public of current construction projects, large structures, and completed four-lane highways.

Materials and Testing found only occasional use for aerial reconnaissance, but it is felt that the use of aerial photography and visual aerial scouting to aid in the location of material deposits has been only partially exploited.

During November 1961, aerial reconnaissance became a section of the Planning Survey Division, and since that time new equipment has been acquired. With the assistance of planning

Cont.

personnel, improvements have been made in camera installations, resulting in better accuracy of photographs obtained.

The acquisition of oxygen equipment has made it possible to obtain wider coverage from higher altitudes--several photographic missions have been accomplished at 18,000 feet and one strip east of Elko was flown for the Design Division at an altitude of 25,000 feet.

In March of 1964 this agency purchased a new CESSNA 310 "I" twin-engine high performance aircraft capable of operating from most of Nevada's out-lying communities. The Cessna is used for rapid and economical personnel transportation. From Nevada State Highway headquarters the airplane can reach any point in the state in less than two hours.

It is expected that the use of this newly acquired mode of transportation will continue to increase.

URBAN TRANSPORTATION PLANNING

To coordinate urban transportation planning, an engineer was hired in April, 1963. This was done to insure compliance with the section of the 1962 Federal Aid Highway Act which provides that after July 1, 1965 all Federal-aid highway projects in urbanized areas of over 50,000 population must be based on a continuing comprehensive transportation planning process carried on cooperatively by the state and local communities. Nevada has two urbanized areas of over 50,000 population which come within the scope of the act. These are the Truckee Meadows area containing the incorporated cities of Reno and Sparks, and the Las Vegas Valley area containing the incorporated cities of Las Vegas, North Las Vegas and Henderson.

It was determined administratively that the studies involved with the continuing planning process should be conducted by Department personnel assisted by employees from the cooperating agencies. This presented a problem since it would be extremely difficult to conduct two major studies simultaneously and still carry on the regular operations of the Department's Planning Division.

The Department, in cooperation with the local agencies, had a major street and highway plan for each of the affected urbanized areas completed quite recently. By discussion and correspondence with the Bureau of Public Roads it was determined that the plan for the Las Vegas Valley could be considered as meeting the July 1, 1965 data provided an organization for the continuing study had been set up, a prospectus for the study prepared, and an agreement entered into with the local agencies to satisfy the requirement of the act that the study process be cooperative. Work is now underway for setting up the organization in the Las Vegas Valley, a draft of a prospectus has been presented to the cooperative agencies for review, and it is expected that the preliminary details for restudying and re-evaluating the recommendations of the master plan report will be completed this fall.

Because the Truckee Meadows study was the older of the two and since a major relocation of the Interstate route through Reno-Sparks had been made subsequent to release of the report it was determined that work in this area should be done first. A prospectus for the study and continuing process was developed by the Highway Department and approved by the cooperating agencies. An agreement with the local agencies also was entered into to cover the financing of the study and insure the continuing study process.

Cont.

The previous studies in both areas had been based on origin-destination surveys made in 1955. Since this basic information was almost ten years old it was felt that a new O-D survey should be made. The field work for this phase in the Truckee Meadows was completed in the summer of 1964 and preparation of the data for use in traffic forecasting is proceeding. Simultaneously with the O-D survey the Department is making an inventory of the streets and roads in the area and a land use study. It is expected that the initial study which will re-evaluate the recommendations of the major street and highway plan will be completed in the summer of 1965.

PROGRAMMING

The programming section schedules preliminary engineering, right of way and construction projects with the Bureau of Public Roads so that the State may be reimbursed from Federal-aid funds for a portion of the costs incurred. During the biennial period the Program Engineer and his assistant programmed 93 projects with a total estimated cost of 76.7 million dollars.

ROAD DESIGN DIVISION

The Design Division in the Highway Department continues to be responsible for the preparation of all plans, estimates and specifications for any and all construction, reconstruction and betterment projects let to contract. In addition to highway projects this includes miscellaneous work to modernize, improve and expand the highway plant to provide facilities for administration and maintenance. To accomplish the preparation of plans, estimates and specifications for any given project it is necessary to coordinate with the functions of and the data received from other divisions with the Highway Department. This includes traffic data from the Traffic section, material information from the Materials and Testing Division, right of way from the Right of Way Division, structure designs from the Bridge Division, construction procedures, controls and methods from the Construction Division and special provisions and specifications developed for each project by the Specification section.

In order to better prepare a complete design on any given project the Design Division has been organized to have a design section to handle each highway system; a section for the Interstate System, one for the Primary and Secondary Systems, and one for the Urban System. Each section is under the supervision of a competent design engineer who is responsible for the design of all projects assigned to that section. All design sections function under the supervision of the Chief Design Engineer.

During the biennium the division was able to develop personnel needed to fill all required positions at the designer level and above. However, there was still a problem in securing adequate personnel to fill the positions of engineering aide, map draftsmen, and assistant designers. This has been an area of high turnover due to low salaries and the youthfulness of the employees, many of whom have not yet selected their vocation or are trying to complete a college education or are faced with a military obligation. There were approximately 90 employees in the Design Division during the biennium, which is approximately the same number employed during the 1961-62 biennium. Limited space has curtailed expansion of the Design Division for a number of years; a condition that will be alleviated when the Department moves into the new building in 1965. All design sections should be expanded to adequately handle the ever-increasing demand for highway construction, reconstruction and betterment.

The Design Division is making more use of the Data Processing section in the calculations of earthwork, traverses, mass diagrams, etc. New computer equipment, programs and a better understanding and knowledge of the processes and relationship between the designers

Cont,

and the data processing supervisors have resulted in excellent results and have eliminated a lot of the tedious calculations required to determine quantities, etc. by the conventional method of cross sections, planimeter readings and end area computations. It is anticipated that more and better results will be obtained with experience and improved programs.

To assist design personnel in the preparation of uniform construction plans for all projects a design manual has been compiled, setting forth geometric standards, policies, procedures, etc. This manual is being continually up-dated to keep design current and to comply with AASHO and Bureau of Public Roads policies and procedures which are being continually revised in an effort to standardize highway design throughout the 50 states.

During the 1963-64 biennium the Design Division continued to make extensive use of aerial mosaic strip maps for design, public hearings and general information for the public. An Aerial Photographic section has been developed in the Highway Department so that any required aerial mosaic strip maps can be secured in minimum time. Aerial maps are extremely valuable in determining drainage channels, frontage road requirements and the relationship of a proposed highway to adjoining properties, topography, etc. Aerial contour maps also are used extensively in route studies, establishing final alignment, earthwork computations, drainage structures and other design requirements.

A PERT program for design also was inaugurated during the 1963-64 biennium. This program, when fully developed, will enable management and design supervisors to keep a project under design on schedule to meet predetermined construction advertising dates. The use of critical path planning will enable all allied divisions to be alerted to the information and data required from their divisions, and the date when required to complete a design on schedule for any given project. This will result in a more orderly approach to the problem of securing and incorporating in design all of the required information necessary for completion so that construction schedules can be met.

During the 1963-64 biennium design was completed and contracts let on 15 Interstate projects, 17 Primary projects, 9 Secondary projects, 3 Urban projects, 1 miscellaneous project and 2 State projects at a total construction cost of $57,763,115.86.

Preliminary engineering expenditures for the projects listed above, and expenditures for design and engineering under way for future projects amounted to $4,418,349.82 during the biennium.

Cont.

This includes $1,282,539.31 paid to consultants for surveys, design and the preparation of plans for Interstate construction through the urban sections of Reno-Sparks and Las Vegas-North Las Vegas, statewide aerial mapping, statewide foundation exploration and analysis, a materials survey along Interstate 80 from Dunphy to Oasis and other specialized investigations and reports.

BRIDGE DESIGN DIVISION

The total number of bridges and grade separation structures constructed or under construction during the biennium was 142, including three which were old bridges widened to new standards. Total estimated construction cost of these structures was $8,478,971 as compared with $5,228,660 the previous biennium.

The Interstate System continues to account for the greatest number of structures with 60 on Interstate 80 in the northern part of the state and 57 on Interstate 15 in the southern part of the state. On Interstate 80, the second section from Verdi to Lawtons is well underway. This will complete the section bypassing Verdi, making the freeway usable from the state line to Lawtons. This section contains two of the longest bridges in the state. One is 1070 feet long and the other 980 feet long. Another important link in Interstate 80 is the bypassing of Fernley and Wadsworth, which includes important structures.

On Interstate 15, construction has been underway on the section from McCarran to Sahara Avenue. This includes nearly a million dollars in bridges and grade separation structures. This will complete the freeway from the state line to Las Vegas. Two other contracts with many structures will complete the freeway from Lamb Boulevard just north of Las Vegas to Glendale.

The Primary System now is getting some interchange structures. On U.S. 395 an interchange was built just north of Lakeview. This is the first link of a freeway system from Carson City to Reno. On U.S. 95 an interchange structure was built at the Mercury junction. This is an important link in the expressway system for the heavy traffic between Las Vegas and the AEC test site.

Some additional prestressed structures have been used with the resulting costs more than regular concrete and less than steel structures of comparable spans. Their principal advantage is in locations where it is desirable to eliminate falsework.

As of June 30, 1964, designs were completed on 34 bridges and grade separation structures which had not yet been placed under contract. This compares with 107 at the end of the previous biennium. This backlog of designs includes 15 by consulting engineers and 19 by the Bridge Division.

Use is being made of the IBM computer. Underway is a program for the design of concrete box girder structures and a program for the elevations of various points on the structures, which should reduce the tedious work of computing vertical curves.

The rapid expansion of the highway program is clearly reflected in the growth of the Right of Way Division. During the past two years, the staff has doubled to a total of eighty-two employees stationed in Carson City, Sparks, Las Vegas and Elko. Various phases of property acquisition are performed by sections of the division. These sections include: engineering, appraisal, appraisal review, negotiations, clearance and property management, utility and clerical.

This division is charged with the responsibility of acquiring all property and property rights necessary for the construction of highways, maintenance station sites, material sites, radio tower sites, roadside recreation sites and access rights.

Right of way personnel work closely with the Location and Design divisions during the initial study and design of proposed projects in order to determine how the proposed project will affect the properties to be traversed. Determination of ownership, preparation of property maps, land descriptions, appraisal reports, agreements, deeds, and other legal documents are necessary before the right of way agent begins negotiations for the property. In most cases, negotiations are concluded to the satisfaction of the state and the property owner. When an agreement cannot be reached, the Right of Way Review Board recommends action by the Legal Division for possible condemnation action.

After acquisition is complete, the division must clear the property. Clearance includes demolition or sale of buildings and improvements by public auction. If the contract date for the highway construction is some months in the future the division may lease the property, thus placing the division in the position of being a temporary landlord.

During the biennium, an Appraisal Review section was created within the Right of Way Division. The section is primarily responsible for reviewing the work of both Department and private appraisers to insure that proper procedures are followed and equitable values established as a basis for negotiation.

One of the newer services provided by the Right of Way Division is relocation assistance, a program authorized by 1963 Legislative action, effective in April 1963. Occupants of purchased properties are provided with all possible information and assistance in locating a new residence, farm, or business, as the case may be. Payments for moving costs are made to eligible persons or businesses. It is estimated that nearly 1200 individuals and businesses will be eligible for this assistance during the next eight years.

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Arrangements for, and inspection of, relocation or adjustment of utility and railroad facilities located within the right of way are also the responsibility of the division. The Utility section has received fine cooperation from the many utility and railroad companies throughout the State.

Right of way acquisitions for the biennium have totaled 471 parcels of land containing 17,782 acres. This represents a total expenditure of $8,094,982 as compared to $2,338,891 expended during the previous biennium. Acquisitions are currently being made through the cities of Reno, Sparks, Las Vegas and negotiations will begin in the near future for properties located in the cities of Elko, Lovelock and Winnemucca. It is conservatively estimated that the number of parcels acquired during the next two years will be triple that number acquired during the 1963-64 biennial period.

In order to assure full participation by the federal government in obtaining and administering rights of way, the division adheres to many state and federal laws and regulations. Through study, informational meetings, correspondence with other states, every attempt is made to keep the employees abreast of current and improved practices in the fields of engineering and property acquisition.

The retention of qualified personnel including those trained by the division continues to pose a problem since outside agencies continue to seek capable employees.

The Legal Division consists of two deputy attorney generals (Chief Counsel and Assistant Counsel for the Department) and two legal research assistants. The Chief Counsel is the administrative head of the Legal Division and is responsible for the efficient operation of this division. Additionally, he supervises the filing of all condemnation actions which are reviewed and signed by him and also reviews and signs all letters of offer made in connection with condemnation matters. The Assistant Counsel's duties are concerned mainly with trial proceedings along with the assistance of three fee attorneys, who are special deputy attorney generals. Both the Chief and Assistant Counsel are called upon daily for consultation and advice from members of the Right of Way staff as well as other divisions of the Department.

There is only one highway legal office in the State of Nevada and it is located in Carson City. There are seventeen counties in the state covering an area of approximately 109,802 square miles. Unfortunately, many actual work days are lost due solely to the fact that these days are used by the attorneys traveling to and from the various counties where the motions or other pleadings are argued and the trials heard. Every effort is made to keep these trips to a minimum and to accomplish as much as possible.

The Legal Division's time is largely employed in the preparation and trial of condemnation actions to acquire property for highway purposes. There has been a tremendous increase in the over-all volume during the last two years.

The following chart sets forth the amount of litigation occurring during the period from July 1, 1962, through June 30, 1964:

Condemnation Cases filed: 71

Condemnation Cases pending: 46

Condemnation Cases settled before trial proceedings began: 22

Condemnation Cases settled by trial: 3

Legal files all complaints required in connection with the acquisition of real property. Before a document is filed, it is reviewed, checked to see that all proper persons are made parties defendant and signed. The property description of all the property required also must be checked and inserted in the

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complaint. The complaint then is filed in the proper court and service of summons and complaint upon the parties effected. Since there is a great diversity in the names of the defendants, the access control to be taken, and the number of parcels involved, it is necessary that each complaint be handled on an individual basis. A written condemnation resolution is prepared wherein the Highway Board declares the necessity of the property involved for highway purposes. At the present time, there is an extremely high rate of increase in the filing of condemnation actions.

The division recommends possible action in connection with proposals of settlement made by counsel for the landowner. It handles all correspondence in connection with condemnation cases and enters into such conferences as are required with the fee attorneys and other interested parties in regard to the case at hand in addition to pre-trial conferences. This often requires many hours of time. It is necessary to take such action to avoid conflicting trial dates.

The Legal Division also prosecutes all the Department's claims (approximately 100 per year) and defends the Department against claims (approximately 25 per year).

In addition to court trials handled, the Legal Division examines and approves the legality and form of all contracts executed by the Department (approximately 300 per year) and also assists in the following:

Rendering opinions daily, both oral and written (approximately 200 per year); preparing contracts, resolutions and agreements with the cities, town, counties, and federal agencies; as well as such legal forms as deeds, affidavits, easements, and other miscellaneous forms; and preparing bills for submission to the Nevada Legislature.

This division works closely with the Design, Bridge, and Right of Way divisions of the Highway Department; as well as with outside agencies such as various cities and counties, the Indian Service, the Bureau of Public Roads, and various consulting engineers in both a service and advisory capacity.

In addition to its normal duties of coordination, acceptance, and control of the materials used in the design, construction, and maintenance of highways, this division is responsible for the record sampling program of the Bureau of Public Roads. This sampling program has expanded to the point that the full time of two men is required for this activity.

In the past, two men were able to sample subgrade material; now it is necessary to use three crews of two men each to perform this function. To provide more adequate coverage of the northern and southern portions of the state, the aggregate crews have been increased from two to four. During the summer construction season the Soils and Aggregate section has been divided into two shifts not only to handle the increased sample load, but to permit more complete utilization of facilities and equipment.

One man is employed as a full-time delineator to sketch material deposits, determine amounts of materials in deposits, and to maintain records of test holes for the description of the materials site that accompanies the Special Provisions for each contract, in addition to functioning as PERT coordinator for this division.

The increasing use of Cement Treated Base has necessitated the training of field crews from the Construction Division as well as laboratory personnel for routine control and record sampling of the cement content and structural strength of these materials.

Several employees have been assigned to the Asphalt section to conduct extraction tests as a part of the record sampling program. These tests determine, from field samples, the percentage of asphalt used and the gradation of gravel in road-mix or plant-mix materials used in paving operations. Other new staff members have been assigned the task of determining the stability of mixtures, void factors, density, thickness and other factors concerned with the quality of paving materials. All of these tests are a part of the record sampling program.

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The Soils and Foundation section is being equipped with apparatus to perform the following tests which previously have been omitted because of lack of personnel and equipment: unconfined compression, direct shear, triaxial shear with both constant and variable lateral pressure, consolidation, and permeability. A test to evaluate the ability of aggregates to withstand wear from traffic, deterioration from oxidation, wetting and drying, and freezing and thawing, has been developed. This test, known as a "Degradation Test" will soon be applied to Nevada aggregates.

The Chemical section of the laboratory has been greatly expanded and modernized through the acquisition of a Beckman spectrophotometer and other instruments permitting the determination of certain elements in minutes rather than hours or days. Facilities have been acquired for the rapid and accurate analysis of steel and other alloys. Equipment is to be installed soon to permit the evaluation of paints and related materials. A new method has been developed by this section for the rapid determination of the cement content of Cement Treated Base materials; it is being considered for adoption by A.A.S.H.O. and presentation to the Highway Research Board.

Growth in this division is characterized by more complete and accurate control of the materials used in highway construction as well as an active and progressive research program.

CONSTRUCTION

During the past biennium, the continued acceleration of the highway program, particularly that portion relating to the Interstate System, made it necessary to greatly expand the size and scope of the program handled by the Construction Division.

Both field and office personnel doubled in number over the 1960-62 biennial period. Included in the 27 employees of the division are the Construction Engineer, the Assistant Construction Engineer, Federal-aid Coordinator, Asphalt Plant and Paving Specialist, Concrete Paving and Structure Specialist, a 15-man Materials and Testing section, a 4-man Field Engineering section, a specifications writer, and two stenographers.

Under the supervision of the Deputy Highway Engineer-Field Operations, the Construction Engineer and his staff during the 1962-64 biennium, in addition to their usual activities, initiated and supervised several technical training classes and short schools. A field testors school was held in Carson City and Reno. Classes were conducted in basic engineering and surveying techniques at each of the six district headquarters, and in several of the resident engineer field offices. In cooperation with the newly appointed Training Officer, the Construction Division is arranging for additional engineering courses to be held during the upcoming biennium.

Greatest growth occurred in the Materials and Testing section where seven field testors were added to handle the sampling required on the Interstate projects and on the "crash" program for building an expressway between Las Vegas and the Mercury test site.

The division continued to have as its primary function the coordination and supervision of construction field personnel and construction procedures. At the same time personnel were responsible for the preparation of final reports, final estimates, the submission and substantiation of contract change orders to the federal Bureau of Public Roads, the verification of material quantities as reported by the field engineers, the revision and updating of standards, specifications and construction methods, and the continuation of the progress sampling program.

Several major changes took place in highway administrative operations during the last two years. An internal audit program was started; a formal training program under the supervision of a full-time training officer was established; a electronic computing technique for management purposes was developed; and a major survey made of Department policies and procedures to determine what improvements could be made.

To assist it in determining what changes should be made, the Department called in a management consultant firm to survey highway policies and procedures. By the end of the biennium, Department officials had already acted on several of the recommendations of the firm, and were considering others contained in a detailed report of the survey.

To provide a closer check on the various phases of the highway program, an internal auditing system was established. A continuing survey of operating procedures is carried on to assure adherence to accepted Department policies.

The past few years have seen the rapid development of systems to aid management in the planning and control of its operations. One of the most discussed and most useful of these systems is called "PERT" - Program Evaluation Review Technique.

In basic concept the "PERT" technique provides a system for the planning and control of the major activities involved in the completion of a project. PERT finds its most useful application when projects are of a highly complex nature with many organizational units involved that are interrelated with a major portion of the activities.

During the biennium the State of Nevada, Department of Highways, adapted the PERT technique to the process of highway design, right of way acquisition, bridge construction and all other activities necessary to award a construction contract. After a period of system development and the operation of pilot projects, highway management adopted the PERT system as the offical system for the planning and control of highway projects.

Work is underway presently to install the balance of the Interstate projects on PERT by January 1, 1965 with the balance of the Primary and Secondary projects due for installation by March 1965. Highway management feels that the PERT system of project planning and control can make a significant contribution to the successful completion of the Interstate program by the 1972 deadline and can also provide a tool for completion of the Primary and Secondary program.

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The PERT system is relatively new to industry and to highway management and the succeeding years will see a concentrated effort to develop new uses and to extend the concept of PERT into new areas for highway management.

The 1964 fiscal year brought to a close the current program of Interstate Freeway hearings. On March 12, 1964, the final hearing was held at Wendover, Utah, as a joint meeting with highway representatives from that state.

Indicative of the growth in administrative activity during the biennium is the marked increase in expenditures over the previous two-year period. In 1963 and 1964, $2,500,000 was spent for various administrative functions, compared to the $1,663,000 spent in 1961 and 1962.

As during the previous biennium, administrative activities covered a wide area, including personnel, public information, stores and purchasing, federal-aid programming, files and mail, data processing, accounting, the operations of the office engineer, and the production of the state magazine.

To this was added a formalized and expanded training program, and a new internal auditing system. Another change was the reorganization of the public information office into two separate sections: one, devoted entirely to the publication of the highway magazine; and the other to all other information services.

In the past two years the activities, functions and responsibilities of the Accounting section have grown in direct proportion to the expanded highway program. Workload volumes have increased to the extent that older accounting procedures have had to be revised, or discontinued completely, and new procedures inaugurated, in order that accounting records may be kept current and that management may be kept at all times aware of the current financial status of the Department.

Accounting has in almost all instances taken advantage of the adaptability, computing capabilities and infinitely greater speed of data processing hardware in order to develop reports and/or records of a meaningful and worthwhile nature, which, in turn, assist various levels of management to perform their duties and responsibilities in the most practical, economical and informed manner possible.

A general ledger system of accounting, with double-entry application, has been successfully inaugurated and integrated with the data processing operation. In this particular application, data processing is utilized to assemble raw data and to present it in a large variety of meaningful but highly detailed tabulations or reports. The general ledger is utilized as a control medium wherein, through a system of checks and balances, the results of data processing may be verified and accuracy assured. In addition, the general ledger provides in summary that information necessary to provide a brief, concise financial picture of the operation of the Department at any desired time.

A definite program has been established for continual survey and re-evaluation of all systems and procedures, with the purpose of continuing the up-dating and streamlining processes in step and harmony with the growth of the Department. Coupled with this program is continual revision and/or clarification of cost accounting procedures to permit the presentation of a more accurate picture of Department operations, and a concentrated endeavor to train and instruct all personnel in correct cost account coding practices. Of considerable assistance in this latter effort has been the creation of a "Desk Procedure Manual" for the government and guidance of Accounting section personnel and such others as may be frequently concerned with current accounting procedures.

Successful implementation of the concurrent audit program has enabled the Department to seek and receive approximately 90% of the federal share of monies expended in the month following the actual expenditure - a situation which is much to be desired when large sums of money are involved and working capital is definitely limited.

DATA PROCESSING

In February of 1963 an IBM 1401 Data Processing System was installed to complement the IBM 1620 Engineering Computer System and to provide additional capabilities for accounting, traffic and statistical applications.

The major efforts of the Data Processing section have been devoted to the development of new methods and computer programs to satisfy the needs of the Highway Department.

In the field of engineering, a complete series of programs for the design of highways has been developed and is now operational, along with programs for the solution of Bridge design and geometrics. The Planning Division has developed a series of programs for the handling of traffic data and for the forecasting of future traffic volume and flow.

Extensive modifications to the highway accounting system has necessitated changes in the computer programs and operating procedures. Major efforts were the development of the Federal-aid Concurrent Audit billing procedures, a change to a double entry bookkeeping system and a new and improved budget reporting system.

Other major developments included computer systems for the new highway "Project Management Program" (PERT) and the development of a system for the circulation of the "Nevada Highways and Parks" magazine.

Advanced and more capable computer systems have been recently announced along with new concepts for their use. The next biennium should see rapid development in the field of management sciences as well as advances in the field of engineering and accounting.

PERSONNEL AND TRAINING

The functions of personnel and training are grouped administratively under the direction of the Personnel Manager.

PERSONNEL

As of the end of the 1963-64 fiscal year, total Highway Department staff was 1,737 employees, an increase of 375 for the same time the previous year and a 505 increase over the last biennial report. The totals include about 180 temporary construction and planning survey employees. The largest increase was in the classes of engineer and engineering technicians.

On July 1, 1964 there were 610 construction employees, 477 maintenance employees, 87 right of way employees and 129 design employees. Of the above, 192 of the employees are in professional engineering classes and 239 in the engineering technician classes.

RECRUITMENT

In the recruitment of employees, several fields were covered with the emphasis on Project Engineers, Design Engineers, Construction Inspectors and Right of Way Agents. Over 125 job offers were made to this group which included graduating engineering students. About 90 accepted employment and have been assigned to various positions. During the past two years, it was necessary to organize and train 14 new construction crews. Although a large number of Right of Way Agents have been recruited, there remains a critical shortage of appraisers due to turnover. The entrance salary for Right of Way Agent trainees has not been increased since July 1959. In many areas where recruitment difficulties are being experienced, the inequity of state pay scales appears to be a major part of the problem.

STUDIES COMPLETED

Various studies and surveys were conducted by the Highway Department and private consultants. As a result, a number of programs were completed. A staffing study of field maintenance crews resulted in the establishment of key positions that should be of long range value to this division.

A study conducted for the classes of supervisory drafting positions has resulted in a better organization of these units and stronger supervision. A formal training program was started by the Department and a training director hired. Supervisory positions within the Right of Way Division have been established to effect a

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stronger program of training and management.

CLASSIFICATION STUDIES

Classification studies have been on a continual basis. During the past biennium, 165 classification studies were conducted and 15 new classes established.

During this same time, 26 employees were dismissed for poor work. Most of them were rejected during the probationary period. Nine employees were temporarily suspended and three demoted. A total of 32 employees retired and a total of 95 longevity pins for fifteen years or more service were awarded.

TRAINING

Training activities participated in by Department of Highways employees are classified in three broad areas. In the past, all training has been on an informal basis. In July 1964 a training supervisor was added to the Personnel Division staff. Mr. George Smith is now the Training Supervisor administrating a formal program. The areas of training are:

1. On-the-job training conducted by the employee's immediate supervisor. At the present time, the department has fifteen classes of positions that are for trainees only. The various divisions require that an employee in a trainee class complete the required phases of work to make him competent for retention on the job. In addition to the trainee classes, on-the-job training may be required of all classes.

2. In-service training. Depending upon course content, the in-service training may be conducted by organizational unit staff, outside technical experts, or a combination of both. The Department established a District Testors Laboratory school in Reno. The instruction staff was composed of selected Construction Division employees and badly needed training was secured in this field. A three-week full time Right of Way Agents school was established in Carson City. The staff was composed of professional instructors from outside the Department. A technical engineering aid classroom was established in Las Vegas. The instruction was conducted by staff members. A total of 18,283 man-hours were devoted to this type of training by 497 employees.

3. Out-service training is training accomplished outside of the Department. Selected highway employees attend these courses in order to develop needed skills which can not be obtained through in-service training programs. Examples of this are classes held at various universities or schools. Some of the courses are: Real Estate Appraisal, Applied Science and Mathematics, Material and Testing, Supervisory Techniques, Street and Highway Traffic problems, etc.

The Department also has entered into agreements with the University of Nevada's Civil Engineering College to train prospective engineers. The Department has agreed to hire the students during the summer months. The student receives training in the major phases of highway work. During the first year, fifteen civil engineering students were enrolled.

PUBLIC INFORMATION

This past biennium was the busiest to date for the public information program. With the expansion in highway activity, came a sharp increase in demand for information services.

News releases and feature material were published on nearly every phase of the highway program, including construction, design, right-of-way acquisition, testing, training, traffic, tourist studies, accounting, legal, and administration. The production of news photos, models, exhibits, and special charts and other drawings reached record level.

In serving the Department, information personnel prepared material and participated in numerous public hearings, fairs, service club meetings, and road openings. At the same time, special coverage was given the annual county meetings conducted by the State Highway Board and other highway officials.

Providing tourists and students with information continued to be a major job as hundreds of thousands of pamphlets and maps were distributed in answer to their requests. The information section again produced its yearly Calendar of Events as a guide to celebrations held throughout the state.

In recognition of Nevada's Centennial of Admission, the Department issued a unique edition of its biennial state road map, complete with historical data and approximated route locations for the early explorer and pioneer trails. Over one million copies were printed for use during the two-year period.

Among the major projects handled through the information program during the biennium were the features and news releases prepared for progress on the Seventh Street freeway in Reno, the air tours of highway work in western and southern Nevada during National Highway Week in May 1963, the erection of roadside monuments denoting historical sites as part of the state's centennial celebration, and the intensive coverage given the completion of design and beginning of construction on the long-awaited expressway between Las Vegas and the Mercury test site.

PHOTOGRAPHY

The Photographic section continued to handle all photographic requests within the Department other than line work and aerial photography.

This entailed photography for "NEVADA HIGHWAYS AND PARKS," the official Highway Department magazine, color photography for "NEVADA HIGHWAYS," the Department's official road map, public relations, construction, testing, industrial, right-of-way, legal, design, traffic, and visual aids.

During the biennium this section added a photographer to handle the greatly increased work load, primarily in the public information and public relations field. This section also worked with other state agencies on photographic problems.

REPRODUCTION AND GRAPHIC ARTS

During the biennium reproduction equipment handled the requirements of the many sections involved in highway design, the majority of such requests emanating from roadway design (Interstate, Primary and Secondary) and from the Planning Survey and Right of Way divisions.

This section reproduces a wide variety of specialized drawings and related items. All jobs are grouped into classes. Work is limited by sheet size and maximum printing area of the machines.

The present equipment being used includes a Dri-Print machine, a blueprint machine, a large vacuum machine frame, a line copy camera, a Salzman enlarger (with related darkrooms for each machine), two multilith offset presses, a Xerox 914 office copier, and a self contained plate making machine. All highway contract plans are reproduced on the multigraph presses.

STORES AND PURCHASING

During the past biennium, the Stores and Purchasing section increased its operation to include procuring and handling reproduction supplies and establishing a perpetual inventory record system covering same. This system provides data on sources of supply, specifications, cost, usage, balance on hand, and stock level needed to establish schedules for re-ordering.

When the move is completed into the new highway building, now under construction, and sufficient space is available, a perpetual inventory system also will be established for all Materials and Testing Division supplies. By purchasing in larger quantities it is anticipated a considerable savings will be reflected in the unit prices and at the same time a more adequate stock can be maintained.

Steps have been taken, with the approval of the State Purchasing Director and other divisions affected within the Highway Department, to initiate a perpetual inventory on all highway property to be maintained on data processing cards. This will reflect the value of all buildings and contents, including heating systems, air conditioning, furniture, office machines, mobile equipment and radio communications.

In initiating this inventory program, forms are being prepared to cover all new purchases, transfers and disposition of items for distribution to data processing.

SCHEDULE OF STOCK ACQUISITION AND STOCK DISBURSEMENTS

	June 1963	June 1964	Total Biennium	Previous Biennium	Percentage Increase
Stock Acquisition	179,660.31	265,537.14	445,197.45	173,115.37	157%
Stock Disbursement	114,309.28	86,740.01	201,049.29	120,400.17	67%

EQUIPMENT

The Equipment Division during the 1963-64 biennium continued the policy of securing diesel equipment and transfer dump trailers to reduce costs on increasing longer hauls.

The work load of the Equipment Division increased in direct proportion to the increased demands on maintenance and construction. Our equipment fleet increased from approximately 1550 units to nearly 1650.

Our budget for the fiscal year 1963 was $2,334,565 with 129 employees, and in fiscal year 1964 we had 136 employees and a budget of $2,553,453.

In analyzing the above figures it must be noted a legislature salary increase of 5% was awarded the 129 Equipment Division employees during this period. Taking the above into consideration this indicates the Equipment Division budget has increased somewhat under 5% per year for the biennium due to increased maintenance and Construction Division demands.

Our new shop building complex in Sparks was completed in November, 1963. An orderly transfer to the new facilities was completed about December 15 without any interruption in the work schedule. The new shop and Highway Department motor facility pool in Carson were completed earlier in 1963.

Sand storage bins with heating facilities were installed at Washoe Hill, Spooners Summit, and Silver Zone Pass in Elko County. Installations are in progress at Golconda Summit, Halleck, and Incline Station at Lake Tahoe. These bins greatly increase the efficiency of sanding operations and help to reduce the driving hazard of icy pavement.

The position of Senior Auditor was established and filled in January, 1964. The responsibilities of this position are to review and advise on accounting procedures within the Equipment Division to conform with Bureau of Public Roads regulations.

Annual inventories from district stockrooms were used to create a catalog for use in all stockrooms to expand the policy of "buying" from other stockrooms within the Equipment Division.

After considerable research with major oil company engineers the Equipment Division has moved to revise its oil and lube policies. These revisions will offer a more simplified, efficient and economical program.

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The Equipment Division has recognized the need for a program to train operators of Highway Department equipment in operation and maintenance. It is planned to inaugurate a training program in the near future. This program will be established in conjunction with the Highway Department in service training programs.

During the 1963-1964 biennial period, the Department's maintenance program showed an increase in activity and in costs. Although winter maintenance work was minimal due to mild weather, late winter and spring rains did cause some problems and added to the normal cost of road repair activities.

In the northeastern part of the state, the moisture affected aggregate sources and delayed maintenance work. Flooding along the Truckee, Carson and Walker rivers occurred in northwestern Nevada in late January and early February 1963, damaging roadways and structures in the Reno area, and in the Washoe and Carson valleys.

A new bridge on Interstate 80 near Wadsworth received extensive damage when high water undermined and washed out sections of slope paving and fill.

For the first time in many years, freezing weather did not occur until October in northern Nevada. This extension beyond the usual September deadline permitted betterment work to be prolonged but hampered the normal fall weed removal.

Offsetting a decrease in snow removal costs during the biennium was the increase in expenses incurred in other phases of maintenance. During the 1963 and 1964 fiscal years, costs averaged $1,118.63 and $1,202.75 per mile, respectively. During the previous biennium, the figures were $894 and $1,158 per mile.

This continuing gain in maintenance expenditures has been due primarily to rising labor costs, more demand by the motorists for highway services such as roadside rests, informational signing, striping, lighting, and an increasing work load. In an effort to slow these rising costs, the Department is using bigger and more modern equipment, more efficient methods of production of materials, and the use of specialized equipment to increase manhour productivity.

Labor costs have been affected by living costs and have climbed steadily since the end of World War II. This trend looks like it will continue in the foreseeable future.

In an effort to retard this increase, the Equipment Division has been upgrading the truck fleet by purchase of larger units and through use of diesel engines in some units to obtain more power and economical operation. For long hauls of aggregate, some trucks are combined with trailers as tandem hauling units to materially reduce hauling costs. In production of gravel and

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sand by screening, radial stackers are being used to improve the operation and cut down on the need for trucks and drivers in stockpiling material.

Better service is being provided the motorist by the use of sand and salt in snow and ice removal. New sanders now are able to distribute the materials evenly and at a controlled rate. In some areas in northern Nevada where icing is a common occurrence during the winter months, heated and insulated storage bins have been installed for on-site loading, greatly reducing haul time during emergencies. Three such units are in operation and three more are being installed.

Other factors that have added to maintenance costs have been the new requirements for signing in conformance with the national manual on uniform traffic control devices, the demand for better delineation by color contrast or striping between the driving lane and shoulder, and the need for installation of non-skid surfaces with good reflectivity for the travel lanes. These requirements have been consistent with the increased emphasis on public safety and could not be ignored.

The betterment program reached a new high during the past biennial period. In the past two seasons, maintenance forces have undertaken major widening projects on U.S. 50 at Lake Tahoe, on Kietzke Lane in Reno and on Oddie Boulevard in Reno and Sparks. In addition, a short section of highway in Panaca was improved with the installation of underground drainage, of curb and gutters and resurfacing. In the first three projects, only the plantmix surfacing was contracted; in the last, only the curb and gutter work.

As part of nearby highway contracts and through the use of contract change orders, sections of U.S. 40 were resurfaced through the towns of Wadsworth, Fernley and Elko. Channelization and lighting were added in a few instances, as on U.S. 95 between Las Vegas and Henderson.

In attempting to improve the organization, an educational program is being instituted. The first phase of this program will be training maintainers in the operation and care of different types of equipment, such as motor graders, trucks, loaders, and snow removel equipment. The instruction will be given to representatives of the districts by specialists, and the representative of each district will carry on the instruction and training in his own district.

Meetings among superintendents, supervisors and foremen have been held in the districts to iron out difficulties and to discuss problems concerned with reports.

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Proper signing and traffic controls are being stressed when operations involve the roadway surface improvement. This training is resulting in safer conditions for both the traveling public and the men working on the roadway.

At the same time, such physical qualifications as eyesight, that may affect employee safety are being checked by the Safety Director. If the maintainer's sight does not meet minimum standards or cannot be corrected, he is limited or eliminated from activity involving certain equipment or vehicle operations.

SERVICE RECORD

40 YEARS OR MORE

Armstrong, G. F.
Cross, Ernest C.
Schultz, Marion I.
Wright, W. O.

35 TO 40 YEARS

Eldredge, Reuben E.
Perry, James A.
Rose, Dale V.
Waite, Marvin H.

30 TO 35 YEARS

Boardman, E. T.
Brown, Charles L.
Clyde, Victor W.
Fell, Verrill W.
Fodrin, Melvin J.
Gibson, W. H.
Greenhalgh, Jack F.
Harmer, Francis J.
Hays, D. H.
Kinne, A. G.
Little, L. W.
Manhire, John T.
Odell, W. Alan
Parvin, Jack
Robbins, Paul E.
Sundeen, Stanley D.

25 TO 30 YEARS

Barrett, Ralph D.
Bawden, John E.
Baxter, George M.
Bonafous, Joe
Carroll, Frank J.
Chambers, L. G.
Cochran, L. F.
Deck, Ted
Doty, Stanley P.
Dube, Paul J.
Gallagher, Thomas
Gardner, Bill G.
Gay, Donald V.
Giraud, Joseph J., Jr.
Gobeli, Fred
Grier, George R.
Howard, A. A.
Johnson, Orrin H.
Kinnikin, Margaret
Koontz, Louis
Leavitt, Vincen E.
McCardle, John E.
McDermott, Tony H.
McInnis, J. R.
Metzger, Harry M.
Miles, Cyril D.
Offen, Elmer B.
O'Sullivan, James
Ottini, Ralph J.
Ream, Mary L.
Reed, Chester H.
Reil, Orvis E.
Rochon, Mary
Ross, Milton F.
Springmeyer, Stanley
Stevens, Glen S.
Walker, Oren
Zilkey, Willard O.

Cont.

20 TO 25 YEARS

Achard, Ruth D.
Anderson, Ivan F.
Baker, Mathew J.
Biggs, Robert B.
Bradley, Delile
Bradley, Ralph W.
Chapman, Daniel P.
Christie, H. J.
Crampton, Philip
Cronin, Barry E.
Cutler, Royal H.
Denton, Aubrey W.
Dillwith, Ned E.
Duval, Richard B.
Garrett, James L.
Gomes, Joseph V.
Greenhalgh, Harold
Ingram, George S.
Inks, Virgil
Joseph, Owen W.
Kleinman, L. H.
League, Robert W.
Manchester, James
Marriage, Edward C.
Mathews, Woodrow G.
Mayer, Henry H.
McDonald, Margaret
Muller, Ernest E.
Munson, Warren
Noteware, Norman D.
Perkins, Clyde K.
Pieretti, Eugene
Primeaux, Patrick
Pringle, Marjorie
Rattazzi, Adele
Reichenback, Otto K.
Reil, Willis A.
Reppert, Myrtle
Sanborn, Jack W.
Sharp, Vernon P.
Springer, Thorne E.
Totman, Beryl W.
Vega, Aldo M.
Veith, George L.
Wallace, James D., Jr.
Wilson, William A.
Wise, Roy B.
Wright, Harold B.

15 TO 20 YEARS

Adams, Bruce
Adams, Herbert
Adams, Lee
Anrig, Homer M.
Barredo, Albert J.
Boegle, Frank S.
Brown, Norman L.
Brown, William H.
Buchanan, Morris B.
Carman, Robert S.
Carvin, Ernest
Cazier, Albert J.
Chipman, Glen H.
Clary, Arthur B.
Coalter, William J.
Cocking, William J.
Colletti, Michael J.
Cook, James W.
Cooney, Jack
Cowperthwaite, Joe
Cress, Charles
Crosby, Donald J.
Dalbey, Allan K., Jr.
Dales, Clyde W.
Depp, Nola
De Weese, William I.
Dorsey, H. G.
Dulion, Henry C.
Dunn, Lawrence J.
Dwyer, Thomas H.
Egoscue, Prudencio
Flournoy, John D.
Glock, A. Martin
Gorton, George D.
Groesbeck, Burt J.
Harris, Scott O.
Herrera, Melchor
Hesse, Wallace E.
Hill, Charles L., Jr.
Hinrichs, Herbert H.
Horsley, Richard R.
Jettke, Edward J.
Jones, Joseph L.
Judnick, Jack
Kietzke, Otto A.
Kispert, Harold G.

Cont.

15 TO 20 YEARS

Koskela, Lillian
Kramer, Jesse J.
Layton, G. Keith
Marcuerquiaga, Martin
Marke, Roy D.
Marke, Willis E.
Marochek, Peter
McKnight, Stirling G.
McNeill, Lester
Mecum, Robert L.
Metcalf, Manley B.
Mitchell, William E.
Monks, Morris J.
Morgan, J. H.
Nagel, William L.
Nauman, John B.
Parker, Robert B.
Pattani, Jules
Perondi, Oliver
Phillipi, Walter R.
Pierini, Peter R.
Pochop, Stanley F.
Preece, Ralph C.
Prina, Victor J.
Prouty, Henry C.
Pruett, Reubel
Quinlan, John J.
Reading, Arthur
Reck, James N., Jr.
Rasmussen, Harold T.
Roberts, Raymond H.
Robertson, William G.
Robison, Wilford E.
Roseberry, Elmer
Sharp, Robert
Shewan, William H.
Shirley, Jerome G.
Shoe, Genevieve
Skanovsky, Bruno
Smith, George A.
Smith, Kathleen H.
Souza, Joe A.
Spargo, William J.
Stockwell, Ernest R.
Stone, Albert A.
Sullivan, James H.
Terry, Rueben G.
Theophanease, Leon
Trussell, Raymond C.
Walsh, Arthur K.
Wayne, Paul
Weidner, Josephine
Woodgate, Alfred M.
Woolverton, Gerald K.
Yates, Wayne A.
Young, Donald H.

RETIREMENT

* Winter, T. A.
Lorigan, Ray W.
Cowart, L. E.
Lane, Bruce M.
Whitaker, Clifton C.
Egoscue, Philipe
Morrison, F. H.
Totman, David H.
Buffington, Earl
Dunsdon, David L.
Stender, William J.
Laird, Albert
Squires, H. A.
Grinnell, George
Glock, Julien A.
Thomsen, Carl E.
Newton, Bob
Jones, William M.
O'Sullivan, James D.
Downs, Stephen
Bryant, Rupert L.
Vandiver, J. L.
Wise, Lynette S.
Kirn, Charles
Kearney, Ralph
Gregg, Lawrence W.
Donati, Guido
* Chapman, Donald
* Meder, Zita D.
Lani, Benjamin
McMurtrey, Ernest
Williams, Zeddie A.

* Died, following retirement.

DECEASED

Bailey, William R.
Guisti, Robert John
Knowles, Norman
Olsen, Carl
Gillespie, Keith H.
Smith, Lester
Bennett, Fred
Grosjean, Russell J.
Zarubbi, Paul
Willard, William H.

(July 1, 1962 to June 30, 1964)

AVERAGE NUMBER HIGHWAY DEPARTMENT EMPLOYEES BY DIVISION AND YEAR

	1961	1962	1963	1964	Net Change
CONSTRUCTION & MAINTENANCE	(733)	(791)	(919)	(1097)	(+364)
Maintenance	386	377	375	395	+ 9
Equipment	96	119	126	137	+ 41
Construction	205	250	365	511	+306
Materials & Testing	25	23	34	39	+ 14
Location	21	22	19	15	- 6
PLANNING & DESIGN	(203)	(235)	(256)	(292)	(+ 81)
Road Design	82	102	108	112	+ 30
Bridge Design	11	11	11	15	+ 4
Right of Way	38	50	56	82	+ 44
Legal	6	4	7	7	+ 1
Planning	66	68	74	76	+ 10
ADMINISTRATIVE SERVICES	(77)	(78)	(89)	(99)	(+ 22)
Accounting & Auditing	12	13	17	18	+ 6
Data Processing	16	15	18	20	+ 4
Office Engineer	4	4	6	7	+ 3
Stores, Mail & Files, Custodial	25	23	25	23	- 2
Personnel & Training	3	4	4	5	+ 2
Public Information	4	4	4	3	- 1
Magazine	-	-	-	5	+ 5
Others	13	15	15	18	+ 5
Totals	1013	1108	1264	1489	+467

TABLE 1
CONSTRUCTION AND RECONSTRUCTION COMPLETED AND UNDER CONTRACT ON THE DESIGNATED STATE HIGHWAY SYSTEM AT THE CLOSE OF THE BIENNIUM

Type	Miles new construction completed during biennium	Miles reconstruction completed during biennium	Miles new construction under contract at close of biennium	Miles reconstruction under contract at close of biennium	Totals
Grading	---	---	17.064	---	17.064
Roadmix	47.125	---	21.124	---	68.249
Plantmix	102.171	121.313	169.919	56.016	449.419
TOTALS	149.296	121.313	208.107	56.016	534.732

TABLE 2

Table Showing Status of Mileage on the Various "State Interest" Highway Systems in Nevada

as of July 1, 1964

COUNTY	Improved by State Highway Department: Federal-aid Primary System	Federal-aid Secondary System	Remaining State Highway System	Total	*State Interest Roads Not Improved by State	Grand Total All Types and All Systems
Churchill	134.2	118.7	16.5	269.4	39.2	308.6
Clark	271.0	244.2	30.4	545.6	256.6	802.2
Douglas	48.9	43.5	-	92.4	14.3	106.7
Elko	330.8	268.0	19.1	617.9	203.4	821.3
Esmeralda	115.3	106.1	20.9	242.3	14.7	257.0
Eureka	73.8	105.7	-	179.5	117.1	296.6
Humboldt	135.1	166.4	-	301.5	163.0	464.5
Lander	61.8	123.9	42.2	227.9	121.3	349.2
Lincoln	99.5	188.5	-	288.0	113.4	401.4
Lyon	62.1	168.4	4.0	234.5	81.7	316.2
Mineral	107.8	96.7	11.1	215.6	64.9	280.5
Nye	240.6	262.9	4.3	507.8	244.8	752.6
Ormsby	20.6	19.4	-	40.0	0.7	40.7
Pershing	75.0	92.3	-	167.3	155.1	322.4
Storey	0.2	12.1	-	12.3	23.2	35.5
Washoe	77.0	191.7	7.6	276.3	327.7	604.0
White Pine	264.9	154.8	-	419.7	121.3	541.0
Totals	2,118.6	2,363.3	156.1	4,638.0	2,062.4	6,700.4
Type	Mileage by Surface Types and Systems as of December 31, 1963					
A-B Primitive and Unimproved	-	-	-	-	538.9	538.9
C Graded and Drained	-	-	-	-	50.8	50.8
D-E Soil-Surfaced and Gravel or Crushed Stone	-	25.8	35.6	61.4	1,328.7	1,390.1
F Bituminous Surface Tr.	-	6.0	3.6	9.6	11.5	21.1
G Roadmix or Plantmix Surface	2,116.6	2,325.8	116.6	4,559.0	131.8	4,690.8
H-I High Type Bituminous	1.6	5.4	0.1	7.1	0.7	7.8
J Portland Cement Concrete	0.4	0.3	0.2	0.9	-	0.9
Totals	2,118.6	2,363.3	156.1	4,638.0	2,062.4	6,700.4

*State-Interest Roads are all routes on the State designated System or Federal-aid Systems.

TABLE 3

COMPARISON OF AVERAGE DAILY TRAFFIC AT AUTOMATIC RECORDERS FOR TEN FISCAL-YEAR PERIODS

		DAILY AVERAGE									
		1954-1955	1955-1956	1956-1957	1957-1958	1958-1959	1959-1960	1960-1961	1961-1962	1962-1963	1963-1964
013110	Sheckler Lane (S.R. 61) S.W. of Fallon	-	-	-	-	-	-	-	-	-	724
102-A	U.S. 91 and 466, S. of Las Vegas	5,465	5,666	6,200	5,678	6,340	6,566	6,959	-	-	-
031115	Interstate 15 South of Jean	-	-	-	-	-	-	-	6,586	6,898	6,872
120	U.S. 91 and 93 North of Nellis Air Base	2,614	2,661	2,806	3,007	2,943	3,932	3,320	3,496	-	-
031125	Interstate 15 S.W. of Glendale	-	-	-	-	-	-	-	-	3,284	3,517
032115	U.S. 93, 95, and 466 S.E. of Las Vegas	11,323	11,343	10,520	10,213	10,516	11,362	12,135	13,859	19,360	21,278
032125	U.S. 95,N.W. of Las Vegas	1,602	1,455	1,907	1,743	1,787	1,682	1,846	3,476	3,770	4,261
032130	U.S. 95, S. of Railroad Pass	-	-	-	-	-	-	-	-	-	814
032215	Las Vegas Boulevard S. of Charleston Boulevard in Las Vegas	-	-	-	-	-	-	-	-	-	28,488
033110	S.R. 12 N. of Logandale	562	572	580	618	610	648	682	643	782	783
033120	Sunset Road S. of McCarran Field, S. of Las Vegas	-	-	-	-	-	-	-	-	-	1,612
033130	S.R. 41 N.E. of Henderson	-	-	-	-	-	-	-	-	-	1,346
035215	Charleston Boulevard (S.R. 85) W. of Rancho Road in Las Vegas	-	-	-	-	-	-	-	-	-	19,360
107	U.S. 40 just east of Elko	2,533	2,582	2,632	2,670	2,812	-	-	-	-	-
071110	U.S. 40 East of Elko	-	-	-	-	-	2,188	2,496	2,583	2,898	3,150
071120	U.S. 40 East of Wells	1,592	1,632	1,767	1,763	1,775	1,779	1,909	1,874	1,875	2,020
072110	U.S. 93 North of Wells	-	-	-	-	-	-	-	-	-	796
103	State Route 46, just South of Elko	654	708	789	823	844	-	-	-	-	-
073110	S.R. 46 Southeast of Elko	-	-	-	-	-	346	361	354	423	419
132110	U.S. 95 South of Orovada	-	-	-	-	-	-	-	-	-	642
132310	U.S. 40 in Winnemucca	-	-	-	-	-	-	-	-	-	7,344
133110	S.R. 8a West of U.S. 95 South of Orovada	-	-	-	-	-	-	-	-	-	113
151110	U.S. 40 W. of Battle Mountain	1,720	1,736	1,808	1,859	1,866	2,055	2,123	2,118	2,325	2,581
152110	U.S. 50 W. of Austin	262	269	290	275	288	300	308	329	366	344
172110	U.S. 93 N. of Caliente, 2.3 mi. S. of S.R. 25	-	-	-	-	-	-	-	-	-	614
193110	S.R. 35 S. of Yerington	991	980	949	644	645	503	471	456	544	573
232110	U.S. 6 and 95 West of Tonopah	830	881	912	916	969	1,093	1,057	1,162	1,363	1,577
233110	S.R. 8a N. of U.S. 6, East of Tonopah	-	-	-	-	-	-	-	-	-	191
233120	S.R. 58 S.W. of Beatty	-	-	-	-	-	-	-	-	-	238
252115	U.S. 395 N. of Carson City	2,964	3,143	3,283	3,584	3,929	4,206	4,433	4,743	5,161	5,490
252125	U.S. 50 W. of U.S. 395 S. of Carson City	1,911	2,076	2,338	2,495	3,110	3,439	3,287	3,465	3,790	4,019
271115	Interstate 80 Northeast of Lovelock	2,104	2,183	2,119	2,228	2,284	2,462	2,575	2,701	2,618	2,727
273110	S.R. 59 South of Lovelock	299	269	303	303	321	300	284	305	351	354
311115	Interstate 80 East of Sparks	3,904	4,066	4,723	4,940	5,045	5,156	5,259	5,421	6,134	6,289
311125	Interstate 80 Southwest of Verdi	3,658	3,706	3,909	3,903	4,324	5,186	5,394	6,024	6,352	6,727
312110	U.S. 395 North of Reno	-	-	-	-	-	-	-	-	-	2,589
312210	Kietzke Lane in Reno	-	-	-	-	-	-	-	-	13,837	15,102
312225	U.S. 40 (East Fourth St.) in Sparks	-	-	-	-	-	-	-	-	17,681	17,608
313110	S.R. 27 W. of U.S. 395 South of Reno	-	773	1,011	1,238	1,135	1,120	1,439	1,519	1,676	1,704
313120	Huffaker Lane West of U.S. 395 South of Reno	-	-	-	-	-	-	-	-	-	330
313130	S.R. 34 South of Gerlach	-	-	-	-	-	-	-	-	296	326
313215	Oddie Boulevard in Sparks	-	-	-	-	-	-	-	-	5,213	6,007
332110	U.S. 50 Alternate and 93 North of McGill	753	767	798	744	652	685	740	710	827	840
109	U.S. 6 and 93, South of East Ely	849	936	1,073	1,023	930	-	-	-	-	-
332120	U.S. 6, 50, and 93 S. of Ely	-	-	-	-	-	539	558	574	632	636

TABLE 4

MOTOR VEHICLE REGISTRATION
TO COUNTIES

County	1955	1956	1957	1958	1959	1960	1961	1962	1963	1964
	$	$	$	$	$	$	$	$	$	$
Churchill	35,049.75	7,070.25	3,958.50	4,021.50	5,328.00	5,642.00	6,098.00	6,852.00	7,627.00	12,914.00
Clark	"	33,042.75	45,546.75	44,239.50	61,297.00	130,741.00	-	-	-	-
Douglas	"	3,041.25	1,802.25	1,998.75	3,022.00	3,595.00	4,062.00	4,443.00	5,059.00	8,212.00
Elko	"	9,072.75	5,226.75	5,298.00	7,332.00	7,587.00	7,937.00	8,528.00	9,218.00	16,349.00
Esmeralda	"	492.00	333.75	320.25	443.00	477.00	557.00	614.00	535.00	871.00
Eureka	"	945.00	556.50	598.50	693.00	660.00	646.00	714.00	751.00	1,246.00
Humboldt	"	4,208.25	2,692.50	2,820.00	3,563.00	3,691.00	4,010.00	4,524.00	5,178.00	8,481.00
Lander	"	1,337.25	860.25	907.50	1,209.00	1,158.00	1,113.00	1,215.00	1,424.00	2,462.00
Lincoln	"	2,646.00	1,563.75	1,587.00	1,995.00	1,773.00	1,892.00	1,625.00	1,749.00	2,976.00
Lyon	"	4,980.75	2,980.50	2,979.00	4,029.00	4,075.00	4,438.00	4,876.00	5,477.00	9,516.00
Mineral	"	5,517.75	3,063.75	3,127.50	4,002.00	4,007.00	4,016.00	4,160.00	4,206.00	6,861.00
Nye	"	4,019.25	1,986.00	2,532.75	3,943.00	3,735.00	3,835.00	4,155.00	6,686.00	12,660.00
Ormsby	"	3,916.50	2,313.00	2,474.25	3,679.00	4,181.00	4,983.00	5,992.00	11,350.00	13,356.00
Pershing	"	2,937.75	1,709.25	1,717.50	2,382.00	2,604.00	2,618.00	2,581.00	2,798.00	4,182.00
Storey	"	506.25	327.00	337.50	438.00	482.00	518.00	492.00	589.00	999.00
Washoe	"	46,298.25	29,853.00	31,647.75	44,728.00	94,905.00	-	-	-	-
White Pine	"	8,370.00	4,972.50	5,163.00	6,445.25	5,918.00	6,105.00	6,473.00	6,664.00	11,477.00
Total	35,049.75	138,402.00	109,746.00	111,770.25	154,528.25	275,231.00	52,828.00	57,244.00	69,311.00	112,562.00

REVENUE FROM FUEL TAX TO COUNTIES

Churchill	53,940.71	58,170.77	66,894.80	57,663.60	65,000.28	68,158.62	72,827.09	79,890.45	89,860.82	90,072.08
Clark	410,587.25	450,540.91	493,723.08	463,794.18	535,766.78	595,209.14	638,424.33	730,398.19	1,027,579.98	1,128,693.22
Douglas	24,461.12	24,777.04	30,084.92	25,217.84	29,447.39	30,226.74	31,011.36	35,236.05	39,854.77	35,462.79
Elko	156,780.73	162,203.31	183,548.89	159,028.25	177,763.03	189,032.44	195,770.01	203,962.26	244,416.60	230,345.23
Esmeralda	19,060.47	21,196.17	23,832.79	21,225.23	24,013.74	26,157.23	27,045.63	27,579.76	28,131.43	22,512.63
Eureka	21,356.44	22,974.69	25,163.51	22,311.86	24,367.61	27,318.10	27,567.21	30,402.23	35,799.59	32,154.30
Humboldt	80,425.44	86,735.28	97,452.25	84,486.65	96,482.18	107,611.92	111,472.32	114,386.77	131,521.27	126,928.52
Lander	37,940.89	41,256.48	45,263.04	39,907.77	44,210.76	46,552.45	49,945.81	52,262.69	62,748.61	58,218.40
Lincoln	48,668.37	50,962.01	57,602.75	48,697.64	54,270.61	57,267.38	59,671.72	66,013.91	79,202.82	78,777.95
Lyon	59,124.47	66,391.22	69,434.28	59,980.18	64,789.42	67,846.89	69,619.27	72,512.02	83,351.39	71,847.50
Mineral	35,742.64	36,104.78	47,655.76	41,791.24	44,981.08	46,366.37	47,803.72	48,299.09	61,086.19	65,149.37
Nye	90,430.36	88,352.14	98,173.46	83,515.72	99,473.46	104,196.03	110,868.43	125,459.08	163,160.45	141,784.44
Ormsby	34,639.74	34,646.48	41,166.78	38,016.20	47,257.74	54,864.52	58,537.60	63,658.22	72,573.63	77,915.97
Pershing	51,763.60	53,474.80	59,955.24	52,115.61	59,552.03	61,671.42	63,225.86	69,220.51	76,876.96	67,154.07
Storey	6,641.97	7,324.66	8,127.39	7,410.30	9,401.18	8,949.59	11,156.54	9,862.14	9,838.14	6,636.92
Washoe	299,986.65	321,653.27	368,734.54	324,980.02	381,148.37	410,935.39	440,313.54	485,920.94	624,725.93	647,862.36
White Pine	97,724.24	100,801.88	115,331.83	98,047.84	105,458.01	109,323.93	113,690.07	122,089.41	135,161.75	112,096.36
Totals	1,529,275.09	1,627,565.89	1,832,145.31	1,628,190.13	1,863,383.67	2,011,688.16	2,128,950.51	2,337,153.72	2,965,890.33	2,993,612.11

TABLE 5

NUMBER OF BRIDGES AND GRADE SEPARATION STRUCTURES

SUMMARY BY COUNTIES AS OF JUNE 30, 1964

COUNTY	BRIDGES OVER WATERWAYS	RAILROAD GRADE SEPARATION STRUCTURES	INTERCHANGE STRUCTURES	HIGHWAY GRADE SEPARATION STRUCTURES	TOTAL
CHURCHILL	37	0	6	2	45
CLARK	119	21	33	14	187
DOUGLAS	20	0	0	0	20
ELKO	33	8	10	2	53
ESMERALDA	2	0	0	0	2
EUREKA	13	6	2	2	23
HUMBOLDT	12	3	13	4	32
LANDER	8	0	2	4	14
LINCOLN	11	2	0	0	13
LYON	17	4	4	4	29
MINERAL	4	0	0	0	4
NYE	15	0	2	0	17
ORMSBY	0	0	0	0	0
PERSHING	5	1	6	2	14
STOREY	0	1	0	0	1
WASHOE	34	6	25	6	71
WHITE PINE	3	4	0	0	7
TOTAL	333	56	103	40	532

TABLE 6

BRIDGES AND GRADE SEPARATION SUMMARY

Number of Structures Built by State Highway Department

SUMMARY BY TYPE	CONSTRUCTED OR UNDER CONSTRUCTION AS OF JUNE 30, 1962	CONSTRUCTED DURING BIENNIUM OR UNDER CONSTRUCTION JUNE 30, 1964	STRUCTURES ABANDONED DURING BIENNIUM	TOTAL AS OF JUNE 30, 1964	STRUCTURES ON HIGHWAY SYSTEM NOT BUILT BY STATE HIGHWAY DEPARTMENT	TOTAL STRUCTURES AS OF JUNE 30, 1964
Plain concrete	4	0	0	4	1	5
Reinforced concrete	287	120	1	406	1	407
Structural steel	33	9	0	42	12	54
Timber	27	0	0	27	1	28
Composite structures (Reinforced concrete and Structural Steel)	11	0	0	11	0	11
Prestressed concrete	15	10	0	25	0	25
Structural plate pipe	2	0	0	2	0	2
TOTAL	379	139	1	517	15	532
Total length of structures in feet	34,871.	13,843.	135	48,579.	1,589.	50,168.
Average length of bridge in feet	92	100	135	94	106	94
SUMMARY BY PURPOSE						
Bridges over waterways	264	58	0	322	11	333
Railroad grade separation	38	15	1	52	4	56
Interchange structures	58	45	0	103	0	103
Highway Grade separations	19	21	0	40	0	40
TOTAL	379	139	1	517	15	532

TABLE 7

MATERIALS AND TESTING DIVISION

During the 1963-1964 Biennium the Materials and Testing Division performed 167,117 individual tests on 28,159 separate samples. In addition, the preliminary roadbed design has been completed for nineteen Interstate and Urban Projects, as well as twenty-two Primary and Secondary Road Projects.

Material Tested	Number of Samples 1963	1964	Total	Number of Tests Each Sample	Total
I. Chemical Section					
a-Cement	33	177	210	10	2100
b-Steel	19	32	51	3	153
c-Conduit and Pipe	51	71	122	1	122
d-Soil	136	96	232	4	928
e-CTB (Research)	32	362	394	3	1182
f-Paint	16	5	21	6	126
g-Fence Posts and Timber	12	72	84	2	168
h-Target Plates	0	24	24	3	72
i-Rubber Products	0	9	9	3	27
j-CTB Preliminary	35	143	178	4	712
k-CTB Contracts	82	1145	1227	4	4908
l-Water	2	3	5	8	40
Subtotals			2557		10538
II. Soils and Aggregates Section					
a-Preliminary Pit Samples	2021	1669	3690	6	22140
b-Borrow	307	588	895	4	3580
c-Finished Products	36	23	59	5	295
d-State and B.P.R. (Record Samples)	597	773	1370	5	6850
e-Open Graded Plantmix	0	13	13	4	52
f-Plantmix-Aggregate	42	29	71	5	355
g-Roadmix-Aggregate	18	15	33	5	165
h-Screenings	3	9	12	3	36
i-Blending Materials	2	8	10	5	50
j-Blotter and Cover Materials	0	5	5	4	20
k-Maintenance Materials	32	9	41	5	205
l-CTB (Field)	8	2	10	4	40
m-Foundation Fill	1	7	8	4	32
n-Back Fill	0	3	3	4	12
o-Special Tests	40	30	70	4	280
p-Subgrade Samples	1735	2030	3765	5	18825
q-Soils, Chemical Analysis	150	682	832	3	2496
r-Preliminary Preparation, "R" Value	2	215	217	5	1085
Subtotals			5098		56550

TABLE 8

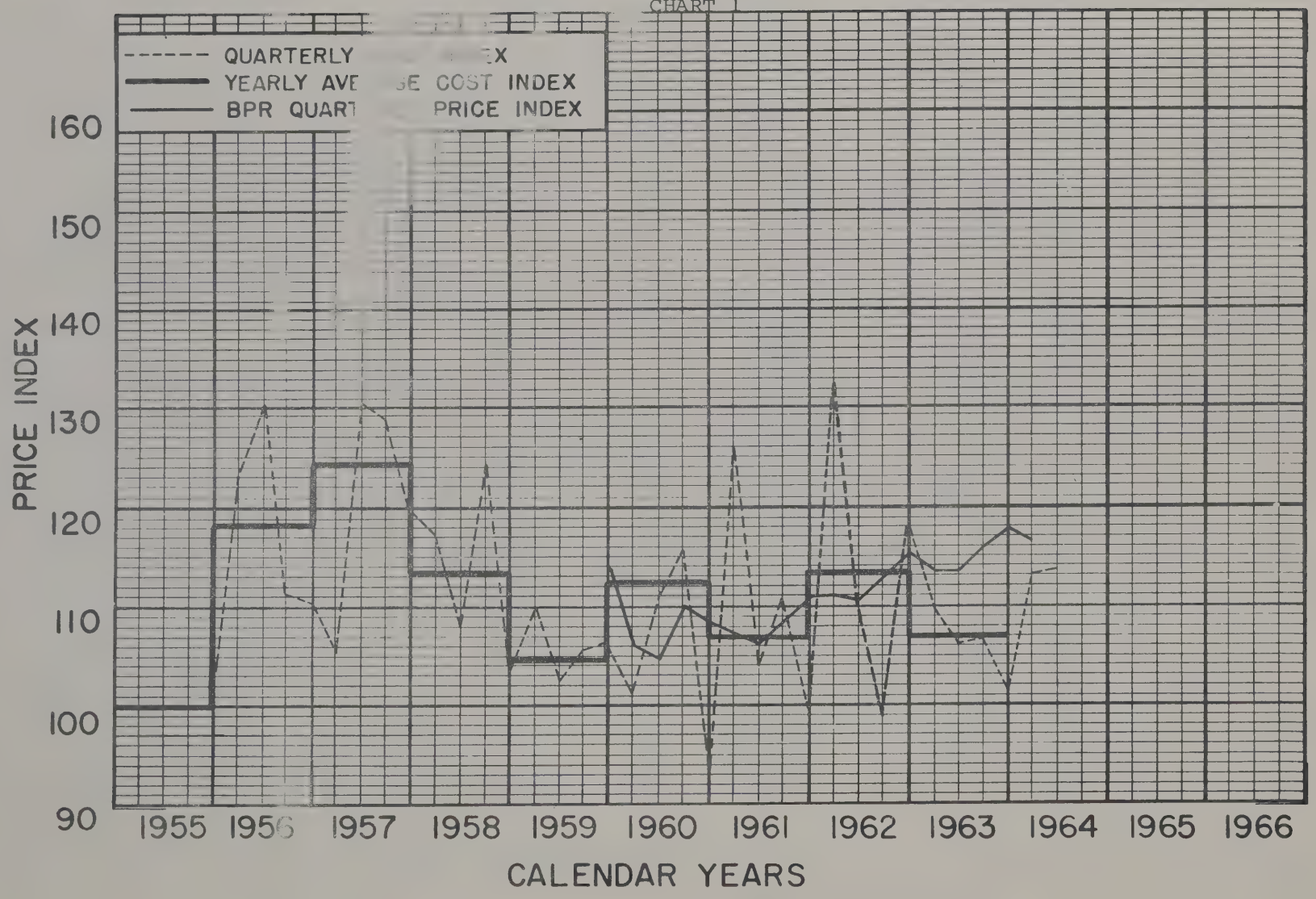
Materials & Testing Division Material Tested	Number of Samples 1963	 1964	 Total	Number of Tests Each Sample	 Total
III. Structural Materials (Concrete Section)					
a-Portland Cement	97	174	271	5	1355
b-Coarse & Fine Aggregates	186	252	438	5	2190
c-Concrete Cylinders (6" x 12")	2021	2927	4948	1	4948
d-Building Blocks	126	104	230	4	920
e-Building Brick	36	32	68	2	136
f-Concrete Pipe	26	34	60	2	120
g-Rip Rap Stone	72	44	116	5	580
h-Water for Concrete	12	10	22	2	44
i-Reinforcing Steel	305	530	835	4	3340
Subtotals			6988		13633
IV. Asphalt Section					
a-Liquid Asphalts	940	1267	2207	9	19863
b-Penetration Asphalts (Asphaltic Cement)	1028	1746	2774	8	22162
c-Emulsified Asphalt	185	162	347	6	2082
d-Bituminous Mixtures	448	501	949	6	5694
e-Corrugated Metal Pipe	736	496	1232	3	3696
f-Metal Wire	94	119	213	3	639
g-Miscellaneous	80	51	131	3	393
Subtotals			7853		54529
V. Stability & Pavement Design Sections					
a-Preliminary Pits	66	179	245	161	3920
b-Production Samples (Gravel)	60	65	125	14	1750
c-Production Samples (Bituminous)	15	9	24	3	72
d-"R" Value Determinations	2	234	236	10	2360
Subtotals			630		8102
Total Samples & Tests Performed in Carson City			23,626		145,852
In addition, Las Vegas branch laboratory performed the following tests:					
a-Emulsified Asphalts	35	39	74	6	444
b-Liquid Asphalts	261	291	552	9	4968
c-Penetration Asphalts	623	692	1315	8	10520
d-Base & Surfacing Materials, Prelim.	30	38	68	6	408
e-Base & Surfacing Materials, Final	237	281	518	5	2590
f-Concrete Cylinders	847	1019	1866	1	1866
g-Concrete Aggregates	30	41	71	5	355
h-Bituminous Mixtures	31	38	69	6	414
Subtotals			4533		21265
GRAND TOTAL			28,159		167,117

STATE OF NEVADA
DEPARTMENT OF HIGHWAYS

PRICE INDEX CONSTRUCTION COST

1955 = 100

CHART 1



STATE OF NEVADA
DEPARTMENT OF HIGHWAYS
AVERAGE CONTRACT PRICES
TABLE 9

Year	Road. Excav. Cu. Yd.	Borrow Cu. Yd.	Type I Gravel Ton	Type 2 Gravel Ton	Liquid Asphalts Ton	Plantmix Surface Ton	Class A & Class AA Concrete Cu. Yd.	Reinf. Steel Pound	24 Inch CMP L. Ft.	Composite Index
1955 Average	.388	.21	.660	.869	31.97	2.64	61.17	.120	5.55	100.0
1956 Average	.506	.300	.845	.893	39.86	2.48	78.98	.144	6.08	118.2
1957 Average	.562	.291	.751	.920	39.63	2.96	71.63	.147	6.72	124.3
1958 Average	.535	.241	.683	.813	35.86	2.49	71.37	.142	6.73	113.3
1959 Average	.397	.234	.704	.925	35.18	2.53	66.86	.129	6.61	104.6
1960 Average	.541	.249	.737	.863	33.52	2.41	65.71	.127	6.67	112.4
1961 1st Qtr.	.664	.480	.776	.864	34.12	2.55	67.25	.143	7.41	125.9
2nd Qtr.	.438	.340	.776	.861	30.27	2.52	60.51	.109	6.64	103.9
3rd Qtr.	.399	.374	.945	1.034	36.24	2.40	71.08	.120	7.00	110.7
4th Qtr.	.349	.288	.773	.827	33.61	2.62	62.07	.119	6.54	99.9
1961 Average	.437	.350	.797	.884	32.98	2.53	62.61	.114	6.81	106.9
1962 1st Qtr.	.703	.300	.880	1.037	32.80	2.97	70.96	.122	6.03	132.3
2nd Qtr.	.333	.350	.912	1.164	33.13	2.99	62.43	.111	6.50	108.2
3rd Qtr.	.390	.270	.772	.819	29.04	2.57	65.55	.112	6.48	99.0
4th Qtr.	.418	.303	.854	1.161	38.82	2.86	78.39	.132	6.13	118.0
1962 Average	.443	.309	.847	1.037	34.11	2.86	66.36	.116	6.28	113.2
1963 1st Qtr.	.442	.276	.817	.971	31.58	2.82	71.84	.103	6.38	109.6
2nd Qtr.	.404	.311	.857	.980	33.12	2.59	58.81	.095	6.11	106.2
3rd Qtr.	.489	.28	.827	1.001	24.97	2.66	61.36	.098	6.15	106.7
4th Qtr.	.344	.30	.844	.987	31.31	2.66	66.44	.104	6.02	101.6
1963 Average	.428	.299	.839	.984	30.73	2.68	63.10	.098	6.20	106.9
1964 1st Qtr.	.446	.31	.881	1.061	28.66	3.25	68.75	.107	5.30	112.7
2nd Qtr.	.380	.66	.922	1.104	31.21	3.14	63.90	.095	6.36	113.6

TABLE 10

CONTRACTS AND LETTINGS

1 July 1962 thru 30 June 1964

56 Contracts and 39 Bid Openings

15 Interstate

12 Primary

9 Secondary

3 Urban

11 State

5 WAP - AD (AEC Funds on primary)

1 N - AD (Access defense)

Amount of Contract	Contracts	Bidders
up to $50,000	6	22
$ 50,000 to $100,000	6	19
100,000 to $250,000	5	18
250,000 to $500,000	7	37
500,000 to $1,000,000	10	59
over $1,000,000	22	145
	56	300

300 Bids submitted on 56 Contracts
Average of 5.4 bidders per Contract

TABULATION INDICATING NUMBER OF CONTRACTORS PREQUALIFIED BY THE DEPARTMENT AT THE CLOSE OF THE BIENNIUM

RATING	Number of Contractors
$ 5,000,000 & over	41
2,500,000 - 4,999,000	17
1,500,000 - 2,499,000	14
1,000,000 - 1,499,000	6
500,000 - 999,000	20
250,000 - 499,000	8
100,000 - 249,000	2
50,000 - 99,999	2
	110

June 18, 1962 there were 89 prequalified contractors.

June 25, 1964 there were 110 prequalified contractors.

TABLE 11

TRANSPORTATION PERMITS
7/1/62---------6/30/64

	Total Units Moved
Heavy and Highway	4,379
Farm Machinery	348
House Trailers	15,246
Buildings	1,780
Military	374
Miscellaneous	678
GRAND TOTAL	22,805

In addition to the above, 15 continuous overload permits were issued for mine to mill, or production source to processing point movement.

TRANSPORATION PERMITS

TOTAL PERMITS ISSUED

7/1/62 thru 12/31/62	6,185
1/1/63 thru 12/31/63	9,683
1/1/64 thru 6/30/64	4,651
GRAND TOTAL	20,519

TABLE 12

ENCROACHMENT PERMITS

7/1/62 - 6/30/64

	No. Units Issued
Telephone & Telegraph Lines	93
Power Lines	75
Service Pipe	
Gas Lines	66
Water Lines	90
Sewer Lines	43
Culverts	10
Miscellaneous Pipe	6
Approach Roads and Driveways	128
Signs	6
Miscellaneous	24
GRAND TOTAL	541

TABLE 13

JOB AUTHORIZATION DATA - 7/1/62 - 6/30/64

District or Division	Number of authorizations this biemmium	Amount authorized this biemmium	Amount authorized previously expended this biennium	Amount expended and authorized this biemmium	Total Expenditures	Balance Incomp.
One	10	118,350.00	4,515.82	106,804.04	111,319.86	11,545.96
Two	61	702,822.00	66,624.59	526,219.78	592,844.37	176,602.22
Three	18	220,700.00	62,893.93	181,474.26	244,368.19	39,225.74
Four	18	367,010.00	50,809.05	206,725.43	257,534.48	160,284.57
Five	14	270,260.00	84,815.53	160,559.99	245,375.52	109,700.01
Six	27	204,850.00	2,285.97	112,972.03	115,258.00	91,877.97
Seven	-0-	-0-	6,548.25	-0-	6,548.25	-0-
Eight	-0-	-0-	8,061.33	-0-	8,061.33	-0-
Nine	2	4,820.25	22.45	1,135.85	1,158.30	3,684.40
TOTALS	150	1,888,812.25	286,576.92	1,295,891.38	1,582,468.30	592,920.87

Note: Report cover # 10748 - 10899 Inclusive

CHART 3

RECEIPTS, DISBURSEMENTS, AND HIGHWAY FUND BALANCE

1962–1964

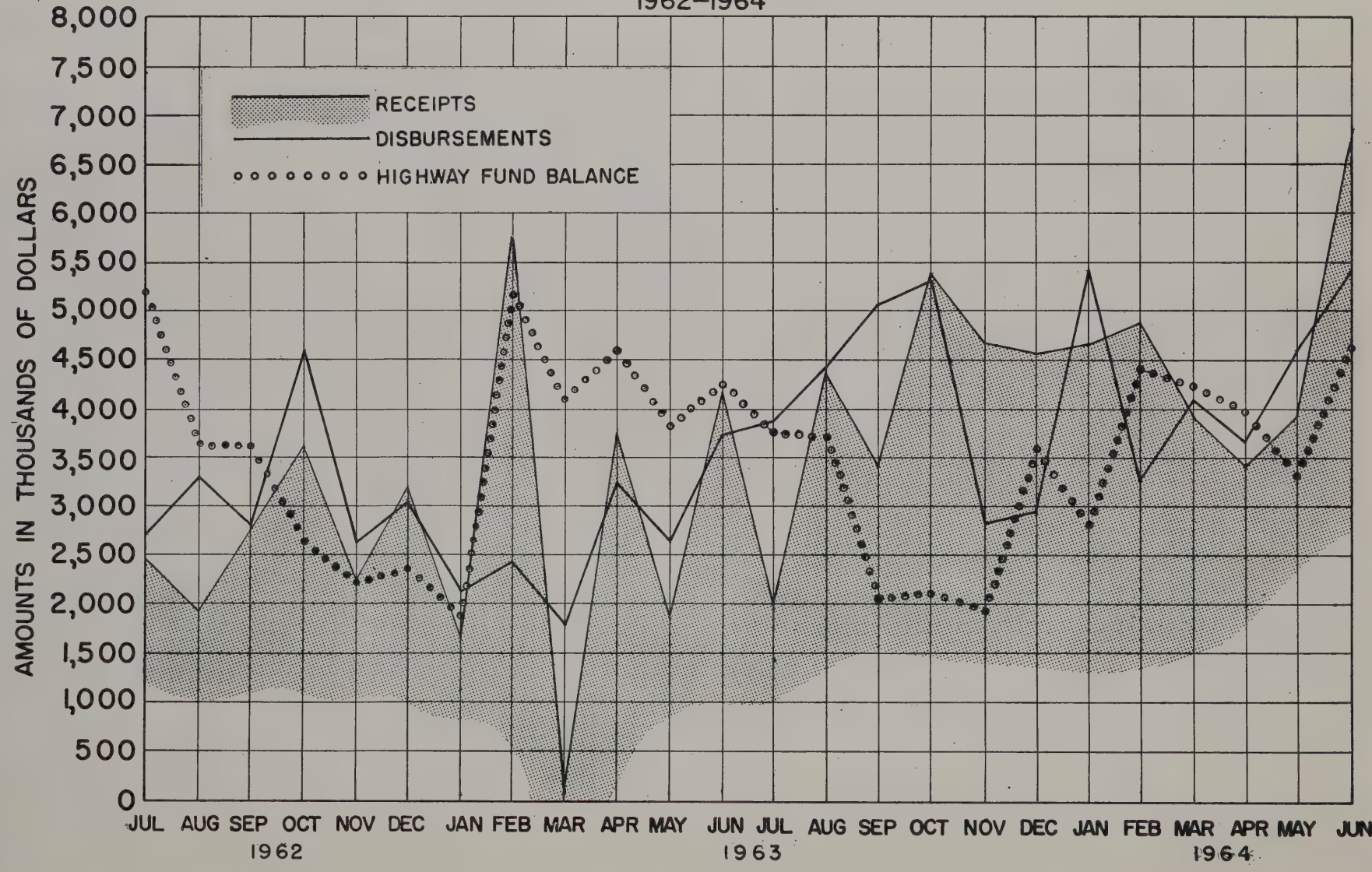
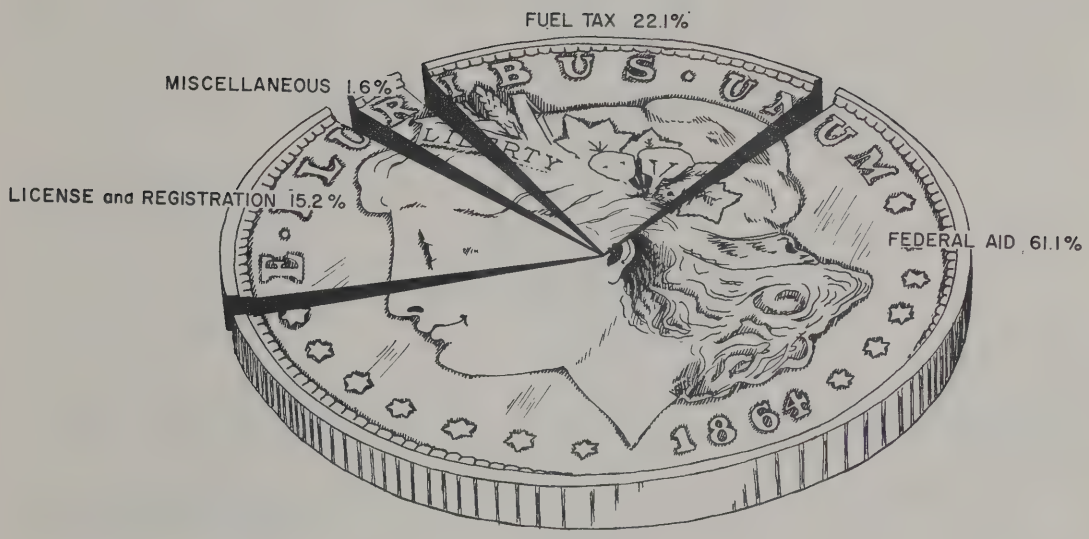


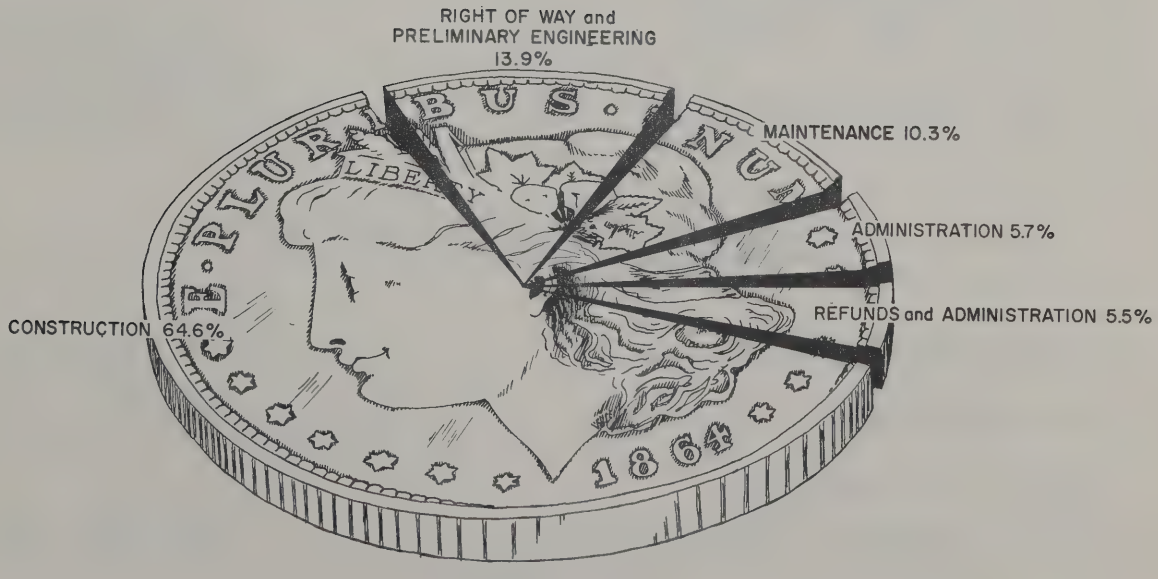
CHART 4

RECEIPTS AND DISBURSEMENTS

BIENNIUM



RECEIPTS



DISBURSEMENTS

TABLE 14

State of Nevada
Department of Highways

DEPARTMENT FINANCIAL HISTORY

1917 thru 1964

REVENUES

FEDERAL AID REIMBURSEMENTS	227,132,049
STATE SOURCES	200,101,517
SUB TOTAL GROSS	427,233,566
LESS: REFUNDS & COLLECTION COSTS	21,691,902
TOTAL RECEIPTS	405,541,664

DISBURSEMENTS

CONSTRUCTION	270,163,285
MAINTENANCE	64,407,828
RIGHT OF WAY & PRELIMINARY ENGINEERING	36,565,810
ADMINISTRATION	30,862,088
TOTAL DISBURSEMENTS	401,999,011

STATE OF NEVADA - DEPARTMENT OF HIGHWAYS

TABLE 15

STATEMENT OF RECEIPTS & DISBURSEMENTS 1963 - 1964

CONTROLLERS RECONCILIATION

ITEMS	1963	1964	TOTAL 1963-1964	PER CENT
Revenues:				
Federal Aid	$ 18,305,532.00	$ 34,619,770.00	$ 52,925,302.00	61.10
Gasoline, Use Fuel Tax (Gross)	9,924,100.01	9,219,349.14	19,143,449.15	22.10
Auto License Fees	2,207,409.32	2,947,090.77	5,154,500.09	5.95
Common Carrier Licenses, Fees	2,994,315.49	4,248,388.87	7,242,704.36	8.36
Driver's Licenses	301,368.03	433,922.25	735,290.28	.86
Participation By Others	-	-	-	-
Accounts Receivable	1,027,346.76	387,259.01	1,414,605.77	1.63
Revenues (Gross)	34,760,071.61	51,855,780.04	86,615,851.65	100.00
Refunds and Collection Costs:				
Gasoline, Use Fuel Tax Refunds	259,244.85	255,193.42	514,438.27	10.54
Gasoline Tax Administration	31,488.00	33,642.69	65,130.69	1.33
Public Service Commission	25,000.00	41,918.56	66,918.56	1.37
Department of Motor Vehicles	135,441.18	238,850.47	374,291.65	7.67
Motor Vehicle Division	258,325.94	317,009.71	575,335.65	11.78
Motor Carrier Division	104,106.00	127,126.98	231,232.98	4.74
Highway Patrol Division	775,836.60	1,021,394.09	1,797,230.69	36.81
Drivers License Division	223,115.00	322,007.81	545,122.81	11.16
Fiscal and Accounting Division	142,788.00	170,114.67	312,902.67	6.41
Automation Division	190,090.57	209,823.85	399,914.42	8.19
Refunds and Collection Costs	2,145,436.14	2,737,082.25	4,882,518.39	100.00
Net Useable Receipts *	$ 32,614,635.47	$ 49,118,697.79	$ 81,733,333.26	
* Gross Revenues Less Refunds and Collection Costs				
Disbursements:				
Construction	22,754,225.36	34,176,292.99	56,930,518.35	68.35
Surveys, Plans and Right of Way	3,885,544.28	8,359,845.72	12,245,390.00	14.70
Maintenance	4,311,433.55	4,783,667.07	9,095,100.62	10.92
Buildings	610,665.60 CR	77,395.38	533,270.22 CR	.64
Equipment and Plants	155,605.36	261,950.22	417,555.58	.50
Administration	1,006,329.05	1,250,097.00	2,256,426.05	2.71
Research and Investigation, Planning	503,144.05	630,375.15	1,133,519.20	1.36
Public Relations	48,130.83	71,502.60	119,633.43	.14
Highways and Parks Magazine	27,490.09	38,535.81	66,025.90	.08
State Road Maps	4,889.38	53,065.65	57,955.03	.07
Annual (July) Traffic Studies	29,729.81	31,348.46	61,078.27	.07
Accounts Receivable	1,059,300.12	388,575.78	1,447,875.90	1.74
Disbursements	$ 33,175,156.28	$ 50,122,651.83	$ 83,297,808.11	100.00

STATE OF NEVADA - DEPARTMENT OF HIGHWAYS

TABLE 16

RECONCILIATION WITH STATE CONTROLLER - 1963

Balance - July 1, 1962		
Highway Fund	$ 5,423,037.07	
Headquarters Building Fund	+ 754,000.00	
Highway Funds Forward		$ 6,177,037.07
Receipts - Gross	34,760,071.61	
Less: Refunds & Collection Costs	- 2,145,436.14	
Net Useable		+ 32,614,635.47
Sub-Total		38,791,672.54
Less: Highway Department Disbursements - 1963		- 33,175,156.28
Highway Funds *Balance - June 30, 1963		5,616,516.26
* Headquarters Bldg. Fund	$ 1,367,569.56	
Highway Fund	4,248,946.70	
Total - June 30, 1963	$ 5,616,516.26	
Highway Fund Balance - June 30, 1963	4,248,946.70	
Plus:		
Receipt Activity Included in F.Y. 1963 By Controller-Included in F.Y. 1964 By Highway	+ 395,606.55	
State Controller's Balance - June 30, 1963		$ 4,644,553.25

Balances - July 1, 1963		
Highway Fund	$ 4,248,946.70	
Headquarters Building Fund	1,367,569.56	
Highway Funds Forward		$ 5,616,516.26
Receipts - Gross	51,855,780.04	
Less: Refunds and Collection Costs	- 2,737,082.25	
Net Useable		+ 49,118,697.79
Sub-Total		54,735,214.05
Less: Highway Department Disbursements-1964		- 50,122,651.83
Highway Funds *Balance - June 30, 1964		4,612,562.22
*Headquarters Bldg. Fund	566,774.07	
Highway Fund	4,045,788.15	
Total - July 30, 1964	4,612,562.22	
Highway Fund Balance - June 30, 1964		$ 4,045,788.15
Plus:		
Receipt Activity Included in F.Y. 1964 By Controller - Included In F.Y. 1965 By Highway		+ 787,524.58
Less:		
Disbursement Activity Included In F.Y. 1964 By Controller - Included In F.Y. 1965 By Highway		- 16,152.54
		$ 4,817,160.19

STATE OF NEVADA - DEPARTMENT OF HIGHWAYS

TABLE 17

COMPARATIVE BALANCE SHEETS

FISCAL YEARS 1963 THRU 1964

	June 30, 1963	June 30, 1964
Assets:		
Cash		
State Controller	4,248,946.70	4,045,788.15
Cash in Bank	91,192.21	351,170.34
Headquarters Building Fund	1,367,569.56	566,774.07
	5,707,708.47	4,963,732.56
Receivables		
Federal Aid	3,162,588.00	2,245,852.00
Co-operative Adjustment Agreements	-0-	595,428.47
Miscellaneous	97,178.47	37,134.92
	3,259,766.47	2,878,415.39
Inventories		
Districts	461,295.90	363,978.75
Equipment Division	344,118.30	402,947.84
Headquarters	43,025.02	71,522.97
Stock Overhead		80,497.07
Work in Progress		199,769.29
	848,439.22	1,118,715.92
Equipment		
* Mobile	1,780,710.80	2,629,066.97
Office Furniture and Misc. Equipment	1,370,296.46	1,231,072.79
	3,151,007.26	3,860,139.76
Land, Buildings and Improvements		
Land, Non-Highway	555,467.72	554,675.70
Buildings and Improvements	4,242,402.64	7,505,011.14
Construction Progress	-0-	2,633,083.33
	4,797,870.36	10,692,770.17
Highway Investment		
Through Traffic Roads	254,794,069.63	266,888,469.89
Construction in Progress	46,949,080.05	58,945,499.60
	301,743,149.68	325,833,969.49
Other Assets	5,249.00	6,846.05
TOTAL ASSETS	319,513,190.46	349,354,589.34

* Includes Depreciation

Liabilities & Surplus		
Payables:		
Vendors	107,967.98	170,783.30
Accrued Payroll		742,500.00
Payroll Deductions	60,450.72	25,761.53
	168,418.70	939,044.83
Encumbrances:		
* Contracts Encumbered	29,902,075.44	30,654,262.86
Utility Adjustments	-0-	322,274.81
	29,902,075.44	30,976,537.67
Unappropriated Surplus:	289,442,696.32	317,439,006.84
Total Liabilities & Surplus	319,513,190.46	349,354,589.34

* Includes Retentage

STATE OF NEVADA - DEPARTMENT OF HIGHWAYS

TABLE 18

ACTIVITY OF STATE HIGHWAY FUND

PERIOD ENDING	RECEIPTS	DISBURSEMENTS	HIGHWAY FUND BALANCE
1962			
July	$ 2,464,723.79	$ 2,704,506.75	$ 5,183,254.11
August	1,932,027.43	3,491,366.46	3,623,915.08
September	2,759,696.48	2,769,589.69	3,614,021.87
October	3,600,435.64	4,590,196.65	2,624,260.86
November	2,211,825.69	2,638,127.30	2,207,959.25
December	3,172,266.61	3,033,009.98	2,347,215.88
1963			
January	1,644,393.06	2,149,914.32	1,841,694.62
February	5,755,679.86	2,410,119.51	5,187,254.97
March	711,515.34	1,794,704.72	4,104,065.59
April	3,727,739.49	3,233,913.33	3,597,891.75
May	1,851,568.04	2,628,193.52	3,821,266.27
June	4,164,200.18	3,736,519.75	4,248,946.70
July	2,005,548.95	3,864,684.97	3,757,380.24 *
August	4,350,962.78	4,417,131.98	3,691,211.04
September	3,397,060.74	5,043,088.01	2,045,183.77
October	5,371,669.11	5,318,173.87	2,098,679.01
November	4,675,610.00	4,832,639.30	1,941,649.71
December	4,569,341.42	2,940,433.68	3,570,557.45
1964			
January	4,652,202.87	5,418,276.41	2,804,483.91
February	4,881,010.77	3,268,509.39	4,416,985.29
March	3,901,170.79	4,091,960.94	4,226,195.14
April	3,402,233.26	3,667,897.57	3,960,530.83
May	3,930,785.55	4,590,192.54	3,301,123.84
June	6,718,183.80	5,406,745.42	4,612,562.22
Average (Biennium)	3,577,160.49	3,668,329.00	3,451,178.73

Note: Disbursements include Refunds & Revenue Subventions

* This balance includes Building Fund - $ 1,367,569.56

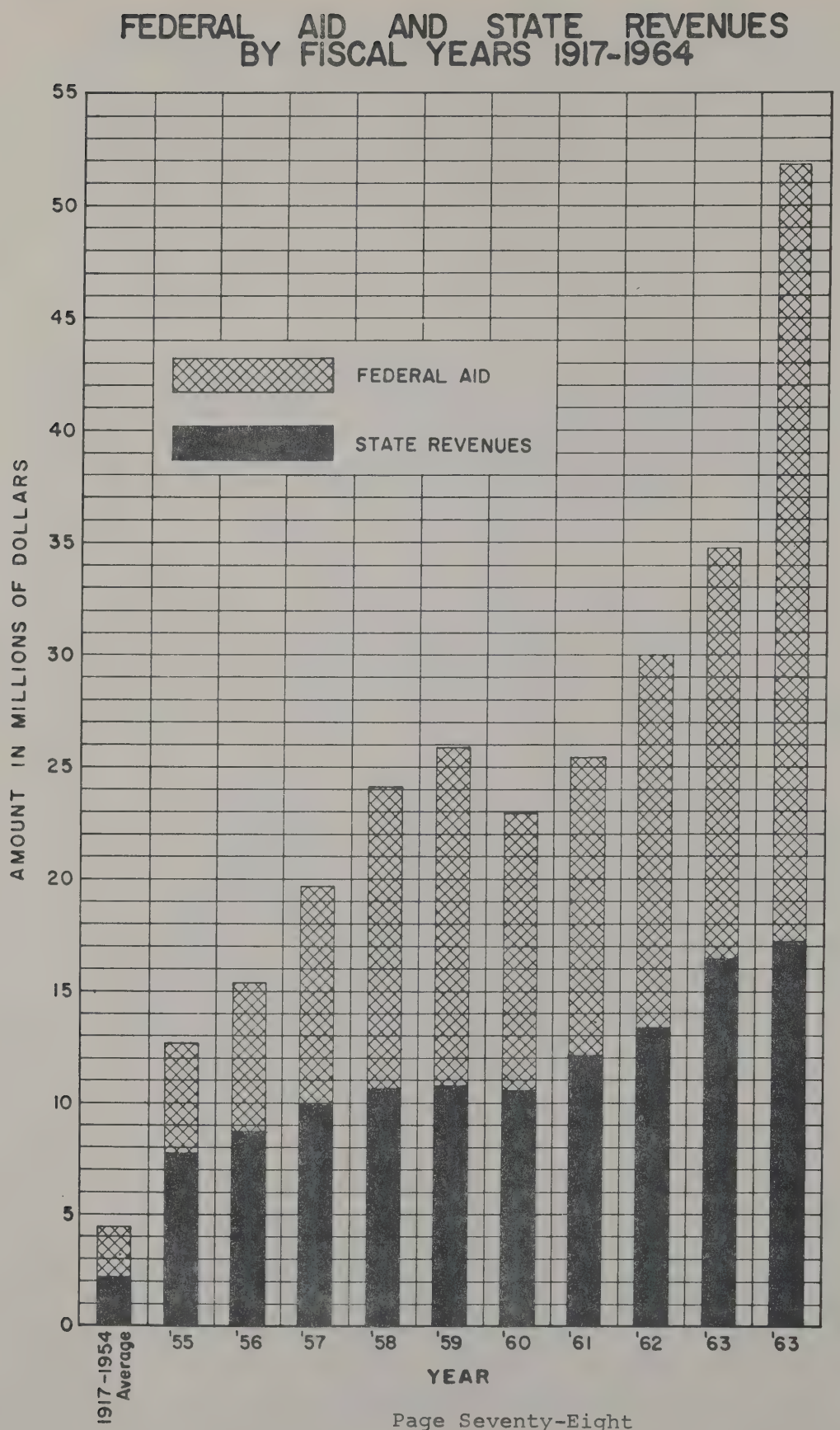
STATE OF NEVADA - DEPARTMENT OF HIGHWAYS

TABLE 19

STATUS OF STATE HIGHWAY FUND

PERIOD ENDING	VOUCHERED AMOUNTS NOT PAID	HIGHWAY FUND BALANCE	TOTAL ESTIMATED H.F. BALANCE	CONTROLLER'S BALANCE
1962				
July	$ 1,299,326.00	$ 5,183,254.11	$ 6,482,580.11	$ 5,257,641.21
August	1,743,231.00	3,623,915.08	5,367,146.08	4,025,640.82
September	1,814,648.00	3,614,021.87	5,428,669.87	3,678,001.64
October	1,679,154.00	2,624, 60.86	4,303,414.86	3,095,130.82
November	3,547,992.00	2,207,959.25	5,755,951.25	2,691,230.09
December	1,613,234.00	2,347,215.88	3,960,449.88	3,205,868.48
1963				
January	3,187,630.00	1,841,694.62	5,029,324.62	2,194,886.67
February	743,922.00	5,187,254.97	5,931,176.97	5,616,899.79
March	1,976,061.00	4,104,065.59	6,080,126.59	4,621,910.90
April	2,103,253.00	4,597,891.75	6,701,144.75	5,270,841.49
May	3,132,841.00	3,821,266.27	6,954,107.27	4,313,191.10
June	3,149,590.00	4,248,946.70	7,398,536.70	4,644,553.25
July	1,612,949.00	3,757,380.24	5,370,329.24	4,728,622.55
August	4,162,852.00	3,691,211.04	7,854,063.04	4,430,992.65
September	4,695,475.00	2,045,183.77	6,740,658.77	2,608,694.34
October	4,513,580.00	2,098,679.01	6,612,259.01	2,956,950.73
November	1,116,922.00	1,941,649.71	3,058,571.71	2,659,084.75
December	4,312,504.00	3,570,580.09	7,883,084.09	4,469,440.69
1964				
January	2,985,212.00	2,804,483.91	5,789,695.91	4,009,368.52
February	3,668,624.00	4,416,985.29	8,085,609.29	5,709,374.68
March	4,520,268.00	4,226,195.14	8,746,463.14	5,826,578.16
April	5,383,465.00	3,960,530.83	9,343,995.83	5,240,579.89
May	5,103,425.00	3,301,123.84	8,404,548.84	4,616,896.10
June	2,245,852.00	4,612,562.22	6,858,414.22	6,148,558.60
Average (Biennium)		3,492,846.34	6,422,513.42	4,250,872.41

CHART 5


FEDERAL AID AND STATE REVENUES
BY FISCAL YEARS 1917-1964
AMOUNT IN MILLIONS OF DOLLARS
55
50
45
40
35
30
25
20
15
10
5
0
FEDERAL AID
STATE REVENUES
1917-1954 Average
'55
'56
'57
'58
'59
'60
'61
'62
'63
'63
YEAR

STATE OF NEVADA - DEPARTMENT OF HIGHWAYS

TABLE 20

HISTORICAL RECORD - REVENUES - 1917-1964

ITEMS	1917-1958	1959-1960	1961-1962	1963-1964	TOTAL TO DATE
Highway User Revenues:					
Fuel Taxes	$ 72,539,604.01	$ 14,348,686.74	$ 16,997,371.54	$ 19,143,449.15	$ 123,029,111.44
Registration Fees	13,184,130.50	2,791,302.44	3,828,653.80	5,154,500.09	24,958,586.83
Carrier Fees	19,322,017.83	4,555,762.35	5,685,419.30	7,242,704.36	36,805,903.84
Drivers Licenses	1,308,962.76	345,844.65	437,589.28	735,290.28	2,827,686.97
Sub Total	106,354,715.10	22,041,596.18	26,949,033.92	32,275,943.88	187,621,289.08
Participation By Others:					
Federal Aid	119,793,323.99	26,498,201.13	27,915,222.00	52,925,302.00	227,132,049.12
Cities and Counties	4,874,664.30	59,074.35	13,642.96	-0-	4,947,381.61
Other Participation	578,486.86	24,755.31	-0-	-0-	603,242.17
Sub Total	125,246,475.15	26,582,030.79	27,928,864.96	52,925,302.00	232,682,672.90
Other Revenues:					
Miscellaneous	4,075,093.82	-0-	-0-	-0-	4,075,093.82
Accounts Receivable	2,061,240.95	245,969.08	602,603.58	1,414,605.77	4,324,419.38
Sub Total	6,136,334.77	245,969.08	602,603.58	1,414,605.77	8,399,513.20
TOTAL REVENUES	237,737,525.02	48,869,596.05	55,480,502.46	86,615,851.65	428,703,475.18
Less: Disbursements - Table	- 225,358,435.63	- 45,180,695.64	- 48,162,071.89	- 83,297,808.11	- 401,999,011.27
Less: Refunds & Collection Cost - Table	- 10,361,122.21	- 2,619,442.78	- 3,828,818.31	- 4,882,518.39	- 21,691,901.69
Less: Fund Transfers	- 250,000.00	-0-	- 904,000.00	+ 754,000.00**	- 400,000.00
Fund Balance Forwarded From Previous F.Y.	+ -0-	+ 1,767,967.18	+ 2,837,424.81	+ 5,423,037.07	-0-
Ending Highway Fund Balance	$ 1,767,967.18	$ 2,837,424.81	$ 5,423,037.07*	$ 4,612,562.22	$ 4,612,562.22

* Does not include Building Fund - $ 754,000.00
** Building Fund Carried Forward - 1962

STATE OF NEVADA - DEPARTMENT OF HIGHWAYS

TABLE 21

ANTICIPATED REVENUES AVAILABLE TO THE HIGHWAY DEPARTMENT FOR THE
1966-1967 BIENNIUM WITH COMPARISONS TO THE 1964-1965 BIENNIUM

	Actual	1965 Work Program	Biennium Totals	1966 Agency Request	1967 Agency Request	Anticipated Biennium Totals
REVENUES:						
Federal Participation						
Interstate System	21,305,571.00	23,385,820.00	44,691,391.00	30,000,000.00	35,000,000.00	65,000,000.00
Primary System	10,049,418.00	11,030,630.00	21,080,048.00	4,972,000.00	4,972,000.00	9,944,000.00
Secondary System	2,940,387.00	3,227,483.00	6,167,870.00	3,307,000.00	3,307,000.00	6,614,000.00
Other - Planning	324,394.00	356,067.00	680,461.00	365,000.00	365,000.00	730,000.00
Sub-Total Federal Participation	34,619,770.00	38,000,000.00	72,619,770.00	38,644,000.00	43,644,000.00	82,288,000.00
Gross Highway User Revenues						
Motor Fuel Taxes	9,219,349.14	12,086,307.00	21,305,656.14			
Common Carrier	4,248,388.87	5,569,518.00	9,817,906.87			
Auto Registrations	2,947,090.77	3,863,553.00	6,810,643.77			
Driver's License	433,922.25	568,860.00	1,002,782.25			
Sub-Total	16,848,751.03	22,088,238.00	38,936,989.03			
Less: Refunds & Collection Costs:						
Refunds	382,320.40	501,212.00	883,532.40			
Public Service Commission	41,918.56	54,954.00	96,872.56			
Tax Commission (Gas Tax Act)	33,642.69	44,104.00	77,746.69			
Department of Motor Vehicles	2,279,200.60	2,987,968.00	5,267,168.60			
Sub-Total	2,737,082.25	3,588,238.00	6,325,320.25			
Sub-Total Net User Revenues	14,111,668.78	18,500,000.00	32,611,668.78	19,980,000.00	21,578,000.00	41,558,000.00
Other Revenues						
Participation - Cities & Counties	-	-	-	50,000.00	50,000.00	100,000.00
Accounts Receivable	387,259.01	500,000.00	887,259.01	400,000.00	400,000.00	800,100.00
Sub-Total Other Revenues	387,259.01	500,000.00	887,259.01	450,000.00	450,000.00	900,100.00
Total Useable Revenues	49,118,697.79	57,000,000.00	106,118,697.79	59,074,000.00	65,672,000.00	124,746,000.00

Note: Projected Highway User Revenues shown for 1964-65 and 1966-67 are net amounts after refunds, Administration, Collection Costs, etc.

STATE OF NEVADA - DEPARTMENT OF HIGHWAYS

TABLE 22

NEVADA'S SHARE OF FEDERAL AID ALLOTMENTS

1917 - 1965

Primary	$	67,454,394.63
Secondary		27,866,417.00
Urban		1,129,380.00
Interstate		32,403,510.00
Public Lands		4,999,207.32
Other Federal Funds utilized		17,697,884.69
Sub Total 1917 - 1958		151,550,793.64
1959 Primary		4,909,104.00
1959 Secondary		3,281,450.00
1959 Urban		166,734.00
1959 Interstate		20,744,054.00
1959 Interstate		2,084,830.00
1959 D-Fund		3,839,673.00
1960 Primary		5,061,574.00
1960 Secondary		3,383,408.00
1960 Urban		171,498.00
1960 Interstate		13,009,625.00
1961 Primary		4,519,154.00
1961 Secondary		3,096,583.00
1961 Urban		175,376.00
1961 Interstate		9,319,860.00
1962 Primary		4,615,457.00
1962 Secondary		3,126,594.00
1962 Urban		348,977.00
1962 Interstate		11,326,219.00
1963 Primary		4,810,272.00
1963 Secondary		3,199,450.00
1963 Urban		348,676.00
1963 Interstate		12,063,300.00
1964 Primary		4,871,838.00
1964 Secondary		3,240,252.00
1964 Urban		357,801.00
1964 Interstate		13,068,575.00
1965 Primary		4,972,303.00
1965 Secondary		3,307,069.00
1965 Urban		365,358.00
1965 Interstate		13,502,498.00
Sub Total 1959 - 1965		157,287,562.00
GRAND TOTAL 1917 - 1965	$	308,838,355.64

STATE OF NEVADA - DEPARTMENT OF HIGHWAYS

TABLE 23

HISTORICAL RECORD OF FEDERAL PARTICIPATION

1917 - 1964

FISCAL YEAR	CONSTRUCTION & CONSTRUCTION ENGINEERING	RESEARCH & INVESTIGATION (PLANNING)	RIGHT OF WAY	PRELIMINARY ENGINEERING	TOTAL FEDERAL AID
1917 - 1956	94,513,126.97	992,692.11	---	---	95,505,819.08
1957	9,616,733.50	140,931.48	---	---	9,757,664.98
1958	13,880,019.21	293,080.72	356,740.00	---	14,529,839.93
1959	14,045,714.55	318,858.00	56,254.00	760,069.00	15,180,895.55
1960	9,839,696.58	247,917.00	365,627.00	864,065.00	11,317,305.58
1961	10,948,751.00	485,171.00	316,045.00	501,271.00	12,251,238.00
1962	14,230,517.00	376,774.00	301,124.00	755,569.00	15,663,984.00
1963	16,021,340.00	354,751.00	1,461,770.00	467,671.00	18,305,532.00
1964	28,129,856.00	324,394.00	4,394,288.00	1,771,232.00	34,619,770.00
TOTALS	211,225,754.81	3,534,569.31	7,251,848.00	5,119,877.00	227,132,049.12

STATE OF NEVADA - DEPARTMENT OF HIGHWAYS

TABLE 24

FEDERAL FUNDS RECEIVED

BY SYSTEM TYPE AND CLASS OF FUNDS

Description	1960	1961	1962	1963	1964	Total Five Years
Interstate System Funds						
Right of Way	$ 102,914.00	$ 158,629.00	$ 13,277.00	$ 1,259,119.00	$ 3,779,838.00	$ 5,313,777.00
Preliminary Engineering	607,283.00	337,084.00	653,705.00	306,737.00	1,168,956.00	3,073,765.00
Construction	2,532,244.58	3,830,443.00	8,216,922.00	7,917,780.00	14,279,561.00	36,776,950.58
Construction Engineering	223,390.00	314,958.00	203,667.00	879,753.00	2,256,126.00	3,877,894.00
TOTAL INTERSTATE FUNDS	$ 3,465,831.58	$ 4,641,114.00	$ 9,087,571.00	$ 10,363,389.00	$ 21,484,481.00	$ 49,042,386.58
Primary System Funds						
Right of Way	$ 192,296.00	$ 73,291.00	$ 240,156.00	$ 161,556.00	$ 367,331.00	$ 1,034,630.00
Preliminary Engineering	107,535.00	90,842.00	76,898.00	93,406.00	312,589.00	681,270.00
Construction	4,148,182.16	4,889,134.00	4,266,403.00	3,518,310.00	7,906,740.00	24,728,769.16
Construction Engineering	248,097.84	224,625.00	235,335.00	390,923.00	853,299.00	1,952,279.84
TOTAL PRIMARY FUNDS	$ 4,696,111.00	$ 5,277,892.00	$ 4,818,792.00	$ 4,164,195.00	$ 9,439,959.00	$ 28,396,949.00
Secondary System Funds						
Right of Way	$ 70,417.00	$ 84,125.00	$ 47,691.00	$ 19,722.00	$ 94,953.00	$ 316,908.00
Preliminary Engineering	149,247.00	73,345.00	9,261.00	66,416.00	282,798.00	581,067.00
Construction	2,365,767.75	1,148,201.00	1,267,952.00	2,929,949.00	2,338,483.00	10,050,352.75
Construction Engineering	322,014.25	277,883.00	13,923.00	325,549.00	224,153.00	1,163,522.25
TOTAL SECONDARY FUNDS	$ 2,907,446.00	$ 1,583,554.00	$ 1,338,827.00	$ 3,341,636.00	$ 2,940,387.00	$ 12,111,850.00
Urban System Funds						
Right of Way	$ -0-	$ -0-	$ -0-	$ 21,373.00	$ 152,166.00	$ 173,539.00
Preliminary Engineering	-0-	-0-	15,705.00	1,112.00	6,889.00	23,706.00
Construction	-0-	249,457.00	26,315.00	53,169.00	253,715.00	582,656.00
Construction Engineering	-0-	14,050.00	-0-	5,907.00	17,779.00	37,736.00
TOTAL URBAN FUNDS	$ -0-	$ 263,507.00	$ 42,020.00	$ 81,561.00	$ 430,549.00	$ 817,637.00
Highway Planning (1½%) Funds	$ 247,917.00	$ 485,171.00	$ 376,774.00	$ 354,751.00	$ 324,394.00	$ 1,789,007.00
GRAND TOTALS	$ 11,317,305.58	$ 12,251,238.00	$ 15,663,984.00	$ 18,305,532.00	$ 34,619,770.00	$ 92,157,829.58

CHART 6

EXPENDITURES

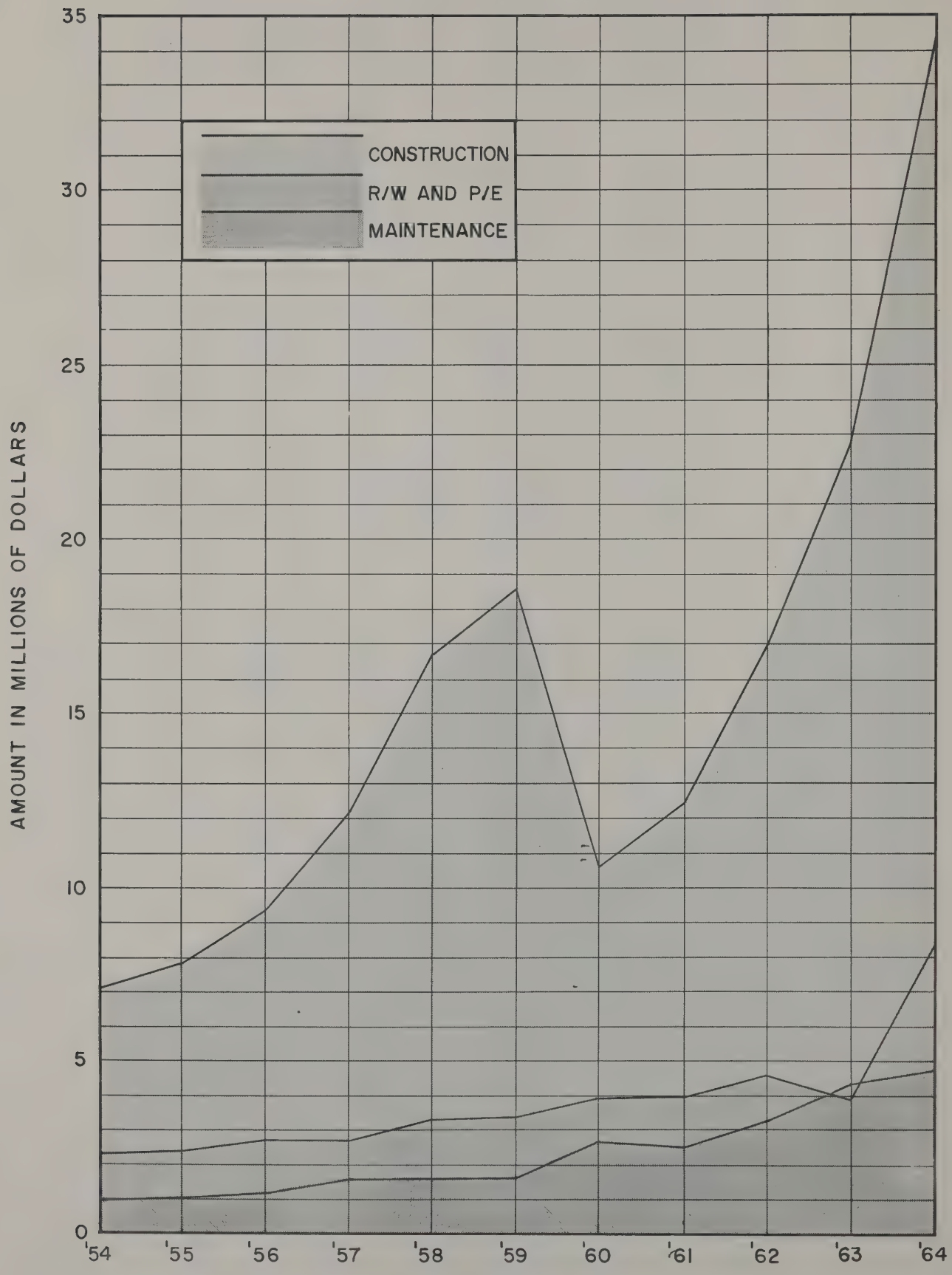


CHART 7

YEARLY EXPENDITURES BY FISCAL YEARS 1917–1964

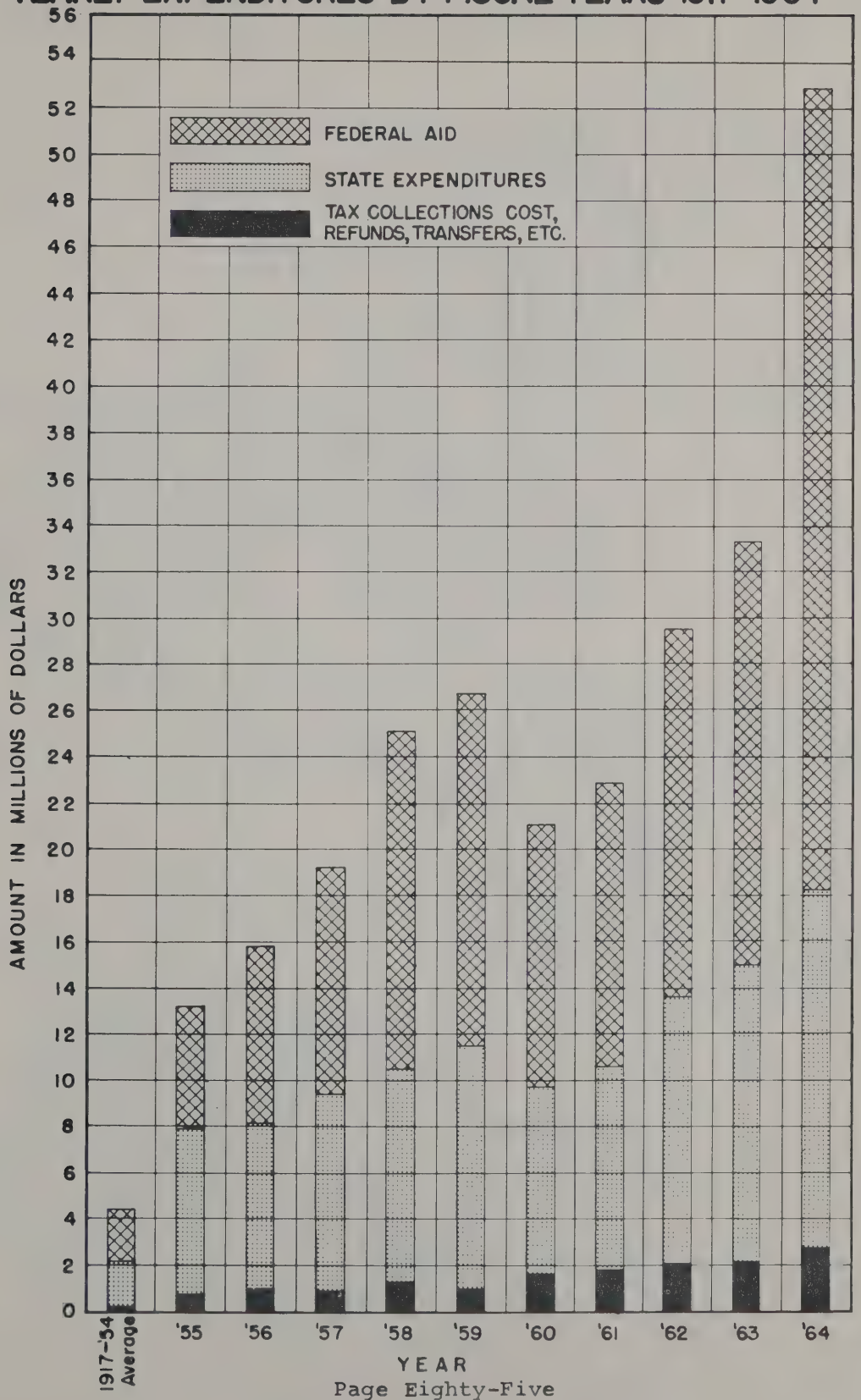
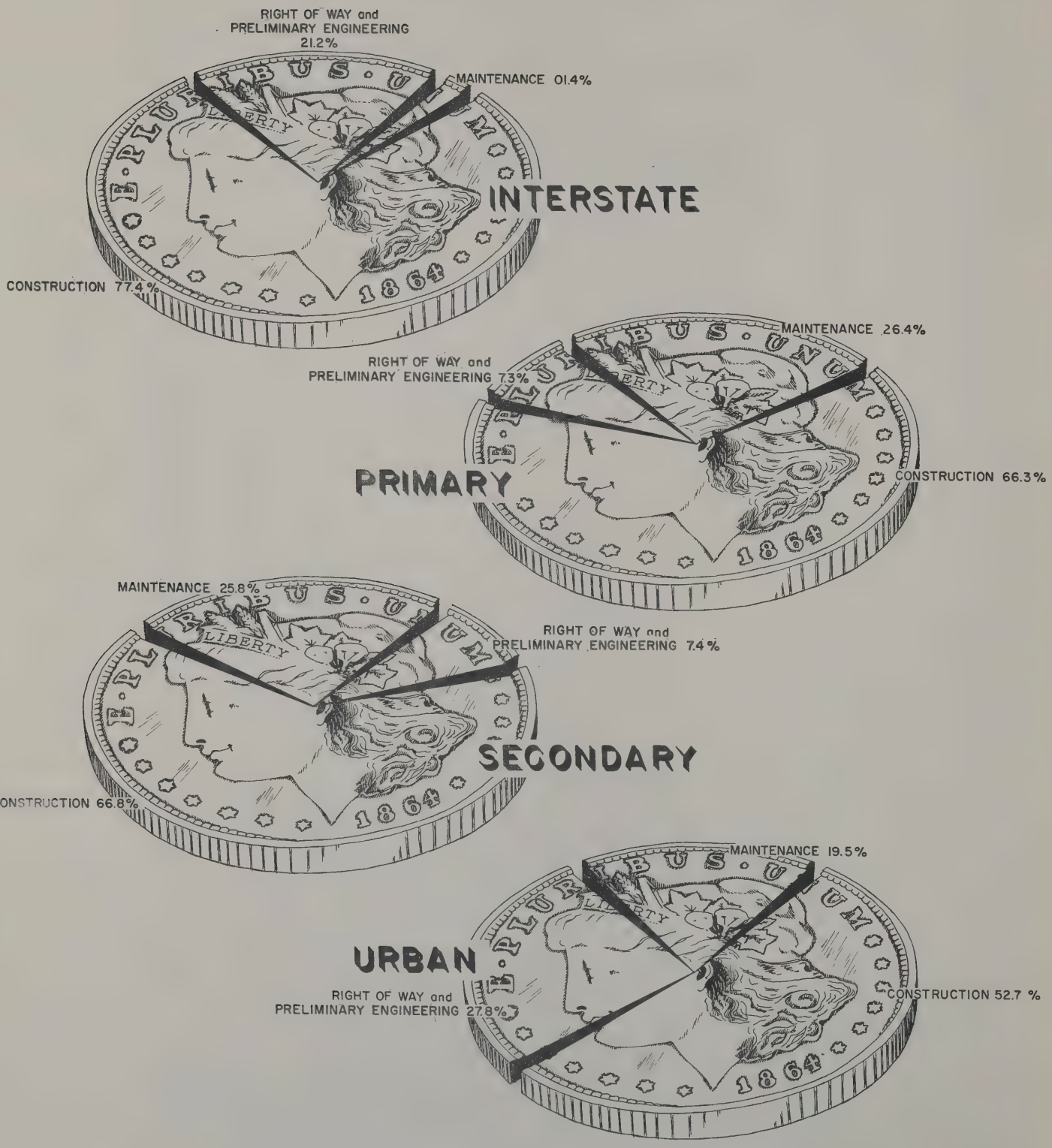


CHART 8
EXPENDITURE PERCENTAGES BY SYSTEM TYPE
BIENNIUM



STATE OF NEVADA - DEPARTMENT OF HIGHWAYS

TABLE 25

ESTIMATED DISBURSEMENTS OF THE HIGHWAY DEPARTMENT FOR THE 1966-1967 BIENNIUM WITH COMPARISONS TO THE 1964-1965

	1964 Actual	1965 Work Program	Biennium Totals	1966 Agency Request	1967 Agency Request	Estimated Biennium Totals
DISBURSEMENTS:						
Construction & Engineering						
Federal (By Reimbursement)						
Right of Way	4,394,288.00	4,823,341.00	9,217,629.00	4,887,000.00	5,521,000.00	10,408,000.00
Preliminary Engineering	1,771,232.00	1,944,172.00	3,715,404.00	1,970,000.00	2,226,000.00	4,196,000.00
Construction Engineering	3,351,357.00	3,678,580.00	7,029,937.00	3,727,000.00	4,211,000.00	7,938,000.00
Construction	24,778,499.00	27,197,840.00	51,976,339.00	27,556,000.00	31,134,000.00	58,690,000.00
Planning-Research & Investigation	324,394.00	356,067.00	680,461.00	360,000.00	408,000.00	768,000.00
Sub-Total	34,619,770.00	38,000,000.00	72,619,770.00	38,500,000.00	43,500,000.00	82,000,000.00
State (Matching)						
Right of Way	1,465,754.06	1,904,184.00	3,369,938.06	2,296,759.00	2,196,599.00	4,493,358.00
Preliminary Engineering	728,571.66	946,563.00	1,675,134.66	1,141,711.00	1,091,922.00	2,233,633.00
Construction Engineering	388,180.65	504,325.00	892,505.65	608,299.00	581,772.00	1,190,071.00
Construction	3,484,768.29	4,527,425.00	8,012,193.29	5,460,820.00	5,222,678.00	10,683,498.00
Planning-Research & Investigation	93,492.30	121,466.00	214,958.30	146,509.00	140,120.00	286,629.00
Sub-Total	6,160,766.96	8,003,963.00	14,164,729.96	9,654,098.00	9,233,091.00	18,887,189.00
Sub-Total, Construction & Engineering	40,780,536.96	46,003,963.00	86,784,499.96	48,154,098.00	52,733,091.00	100,887,189.00
Maintenance						
Routine Roadway	1,262,017.58	1,423,665.00	2,685,682.58	1,490,204.00	1,631,908.00	3,122,112.00
Special Surface	150,551.46	169,835.00	320,386.46	177,773.00	194,678.00	372,451.00
Shoulder & Approaches	140,014.67	157,949.00	297,963.67	165,331.00	181,052.00	346,383.00
Roadside & Drainage	1,282,253.87	1,446,493.00	2,728,746.87	1,514,100.00	1,658,076.00	3,172,176.00
Traffic Services	1,183,082.70	1,334,618.00	2,517,700.70	1,396,995.00	1,529,836.00	2,926,831.00
Snow, Ice & Floods	729,090.08	822,477.00	1,551,567.08	860,918.00	942,783.00	1,803,701.00
Structures	28,509.36	32,161.00	60,670.36	33,664.00	36,865.00	70,529.00
Headquarters - Administration	8,147.35	9,191.00	17,338.35	9,621.00	10,536.00	20,157.00
Sub-Total, Maintenance	4,783,667.07	5,396,389.00	10,180,056.07	5,648,606.00	6,185,734.00	11,834,340.00
Administration						
General Administration	335,690.94	378,690.00	714,380.94	396,389.00	434,083.00	830,472.00
Buildings (Includes Contracts)	2,250,883.43	1,300,000.00	3,550,883.43	1,330,000.00	1,330,000.00	2,660,000.00
Public Hearings	21,087.80	23,787.00	44,874.80	24,899.00	27,267.00	52,166.00
General Office (Headquarters)	798,035.23	900,253.00	1,698,288.23	942,329.00	1,031,935.00	1,974,264.00
Highways & Parks	38,535.81	43,472.00	82,007.81	45,504.00	49,831.00	95,335.00
State Road Map	53,065.65	59,863.00	112,928.65	62,661.00	68,619.00	131,280.00
Public Relations	71,502.60	80,661.00	152,163.60	84,431.00	92,460.00	176,891.00
Special Traffic Studies	243,837.31	275,070.00	518,907.31	287,926.00	315,305.00	603,231.00
Equipment & Plants	261,950.22	295,501.00	557,451.22	309,312.00	338,724.00	648,036.00
Headquarters Office Building	95,283.03	107,487.00	202,770.03	112,511.00	123,210.00	235,721.00
Reimbursable Expenditures	388,575.78	438,347.00	826,922.78	458,834.00	502,465.00	961,299.00
Sub-Total Administration	4,558,447.80	3,903,131.00	8,461,578.80	4,054,796.00	4,313,899.00	8,368,695.00
Total	50,122,651.83	55,303,483.00	105,426,134.83	57,857,500.00	63,232,724.00	122,090,224.00

STATE OF NEVADA - DEPARTMENT OF HIGHWAYS

TABLE 26

FEDERAL & STATE PROPORTION OF EXPENDITURES

RIGHT OF WAY & PRELIMINARY ENGINEERING

YEAR	TOTAL R/W & PRE. ENGR. COSTS	FEDERAL SHARE	%	STATES SHARE	%
1960	$ 2,700,844.16	$ 1,229,692.00	45.5 %	$ 1,471,152.16	54.5 %
1961	2,477,351.46	817,316.00	33.0 %	1,669,035.46	67.0 %
1962	3,203,997.87	1,056,693.00	33.0 %	2,147,304.87	67.0 %
1963	3,924,431.32	1,929,441.00	49.0 %	1,994,990.32	51.0 %
1964	8,352,111.73	6,165,520.00	73.8 %	2,186,591.73	26.2 %
Total 5 Years	$ 20,658,736.54	$ 11,198,662.00	54.2 %	$ 9,460,074.54	45.8 %

CONSTRUCTION & CONSTRUCTION ENGINEERING (INCLUDES PLANNING)

YEAR	TOTAL CONSTRUCTION & ENGINEERING	FEDERAL SHARE	%	STATES SHARE	%
1960	$ 11,370,292.61	$ 10,087,613.58	88.7 %	$ 1,282,679.03	11.3 %
1961	13,159,422.97	11,433,922.00	86.9 %	1,725,500.97	13.1 %
1962	17,832,918.62	14,607,291.00	81.9 %	3,225,627.62	18.1 %
1963	23,994,018.01	16,376,091.00	68.3 %	7,617,927.01	31.7 %
1964	34,919,350.53	28,454,250.00	81.4 %	6,465,100.53	18.6 %
Total 5 Years	$ 101,276,002.74	$ 80,959,167.58	80.0 %	$ 20,316,835.16	20.0 %

STATE OF NEVADA - DEPARTMENT OF HIGHWAYS

TABLE 27

COMPARISON THE LAST TEN YEAR PERIOD

CONSTRUCTION & ENGINEERING EXPENDITURES

PERIOD (FISCAL YEARS)	CONTRACTOR'S PAYMENTS	CONSTRUCTION ENGINEERING	PRELIMINARY ENGINEERING	RIGHT OF WAY (INCLUDES ACQUISITION)	SUB TOTAL	STATE CONST. ADD. & BETTERS.	RESEARCH & INVEST. (PLANNING)	TOTAL CONST. & ENGINEERING
1955	7,032,300.05	840,181.81	697,121.71	312,145.35	8,881,748.92	194,787.14	176,726.63	9,253,262.69
1956	8,244,100.81	1,105,450.57	794,974.47	400,979.31	10,545,505.16	215,481.93	242,588.68	11,003,575.77
1957	10,774,843.77	1,380,709.02	954,444.64	655,963.16	13,765,960.59	387,994.03	290,492.92	14,444,447.54
1958	15,305,862.64	1,372,105.82	1,094,137.02	471,636.73	18,243,742.21	276,108.01	399,518.65	18,919,368.87
1959	16,986,542.21	1,645,073.81	1,091,190.26	515,056.95	20,237,863.23	315,163.03	440,557.37	20,993,583.63
1960	9,509,236.61	1,147,603.58	1,494,399.38	1,202,330.73	13,353,570.30	358,700.49	505,856.98	14,218,127.77
1961	11,067,884.63	1,401,860.62	1,616,167.39	861,184.07	14,947,096.71	552,478.19	476,134.93	15,975,709.83
1962	15,174,577.23	1,880,994.87	1,715,583.89	1,488,413.98	20,259,569.97	576,260.15	508,255.68	21,344,085.80
1963	17,569,098.09	2,366,989.79	1,957,184.48	1,979,684.52	23,872,956.88	782,869.81	503,144.05	25,158,970.74
1964	29,480,587.62	3,782,837.13	2,499,803.66	5,860,308.07	41,623,536.48	779,091.88	630,375.15	43,033,003.51

CHART 9

COMPARATIVE MAINTENANCE COSTS

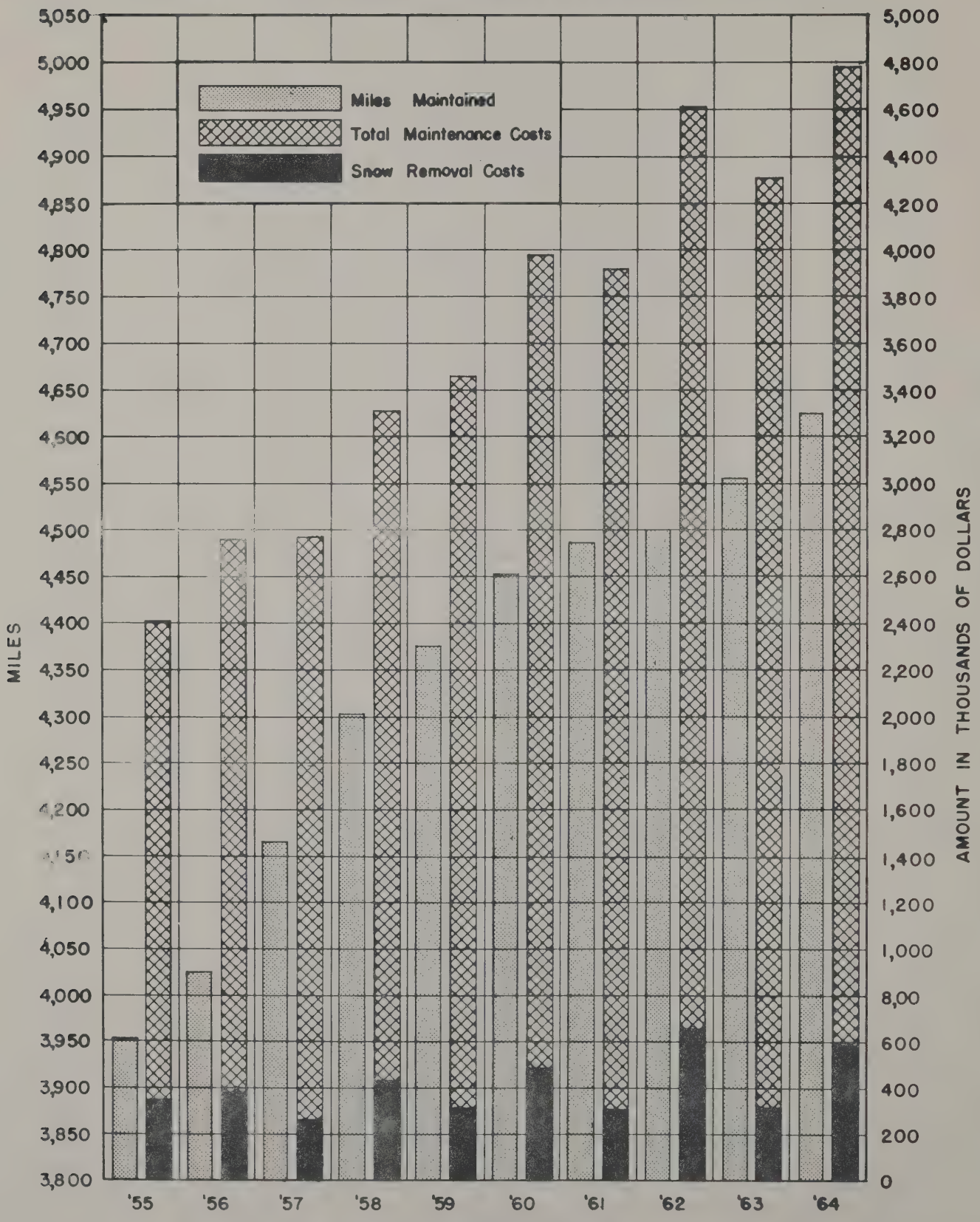
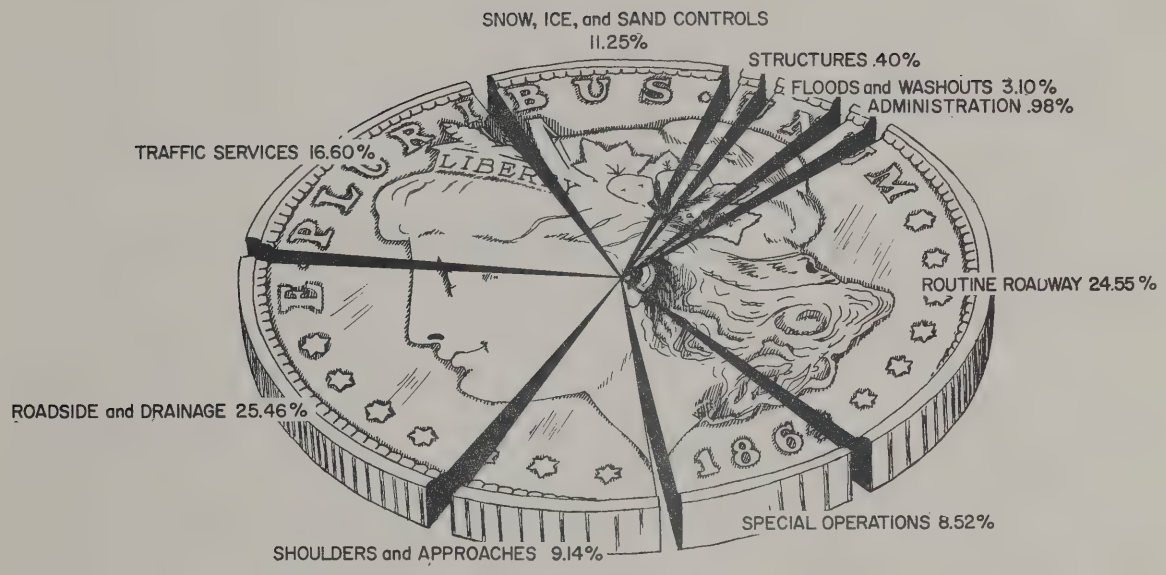
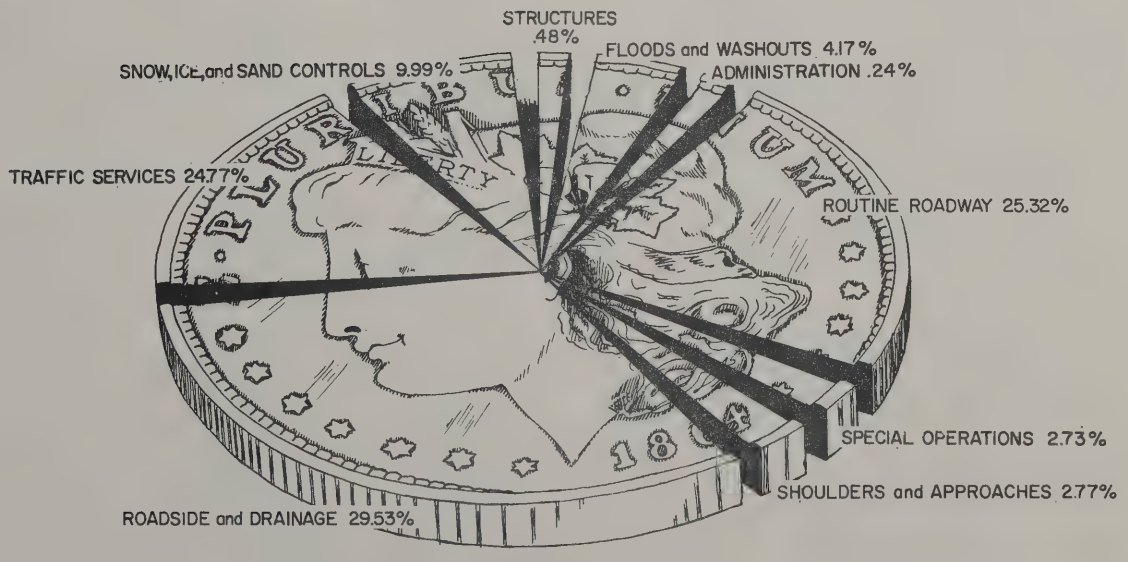


CHART 10

MAINTENANCE EXPENDITURES



AVERAGE
1953-1962



BIENNIUM
1963-1964

STATE OF NEVADA - DEPARTMENT OF HIGHWAYS

TABLE 28

EXPENDITURES FOR VARIOUS MAINTENANCE OPERATIONS

FISCAL YEARS 1963 & 1964

DESCRIPTION	F.Y. 1963	F.Y. 1964	TOTAL 1963-64	PER CENT
Routine Roadway:				
Patching holes and ruts - spot sealing	605,161.55	637,176.93	1,242,338.48	13.67 %
Dragging, blading & reshaping	18,594.25	24,983.13	43,577.38	.48 %
Filling, trimming, expansion joints, cracks	20,911.72	49,455.21	70,366.93	.77 %
Applying light seal & blotter or chips	394,696.81	550,402.31	945,099.12	10.40 %
Sub Totals	1,039,364.33	1,262,017.58	2,301,381.91	25.32 %
Special Roadway Operations:				
Applying dust palliatives	364.77	2,341.25	2,706.02	.02 %
Replacement of gravel, crushed stone	407.00	1,654.04	2,061.04	.02 %
Reprocessing bituminous surface	15,598.38	6,962.60	22,560.98	.24 %
Bituminous surface treatment	82,702.35	139,593.57	222,295.92	2.45 %
Sub Totals	99,072.50	150,551.46	249,623.96	2.73 %
Shoulder & Approaches:				
Shoulder patch & minor washouts	81,986.75	95,790.21	177,776.96	1.95 %
Bituminous shoulder treatment	28,687.04	33,468.52	62,155.56	.68 %
Reprocessing bituminous shoulders	1,674.33	10,755.94	12,430.27	.14 %
Sub Totals	112,348.12	140,014.67	252,362.79	2.77 %
Roadside & Drainage:				
Repair of cuts, fills & slopes	434,146.16	386,519.23	820,665.39	9.02 %
Cleaning, retrenching drains	188,802.38	209,126.93	397,929.31	4.38 %
Removal of weeds	359,476.79	275,690.53	635,167.32	6.98 %
Removal of debris	344,367.60	322,514.98	666,882.58	7.33 %
Landscaping roadside	4,536.59	12,759.40	17,295.99	.19 %
Maintenance of sidewalls, dikes	72,309.61	75,565.42	147,875.03	1.63 %
Halogeton control	12.30	77.38	89.68	.00 %
Sub Totals	1,403,651.43	1,282,253.87	2,685,905.30	29.53 %
Traffic Services:				
Repairs to signs, safety devices	594,480.28	651,996.20	1,246,476.48	13.71 %
Removal of advertising signs	4,106.29	3,349.98	7,456.27	.08 %
Traffic lane & center striping	293,014.81	318,212.31	611,227.12	6.72 %
Maintenance of guardrails	41,951.37	46,325.42	88,276.79	.97 %
Highway & bridge lighting	15,958.81	16,169.98	32,128.79	.35 %
Maintenance of roadside rests	39,707.98	37,945.03	77,653.01	.86 %
Pedestrian crossing markings	36,411.91	55,441.16	89,853.07	.99 %
Patrolling	43,938.77	55,642.62	99,581.39	1.09 %
Sub Totals	1,069,570.22	1,183,082.70	2,252,652.92	24.77 %
Snow, Ice & Sand Controls:				
Snow fence & markers	54,845.60	55,936.21	110,781.81	1.22 %
Removal of snow & ice	157,082.82	340,322.02	497,404.84	5.47 %
Sanding & salting icy surfaces	97,246.68	189,694.09	286,940.77	3.16 %
Open waterways & drains	348.92	1,711.03	2,059.95	.03 %
Removal of sand drifts	5,305.18	4,757.14	10,062.32	.11 %
Maintenance of road blocks	631.83	-0-	631.83	-0-
Sub Totals	315,461.03	592,420.49	907,881.52	9.99 %
Structures:				
Cleaning, opening channels	3,648.40	9,062.36	12,710.76	.14 %
Repairs to structures	5,916.85	6,851.95	12,768.78	.14 %
Painting structures	3,575.17	8,537.83	12,113.00	.13 %
Maintaining pumping plants	1,981.31	3,145.29	5,126.60	.05 %
Bridge & culvert inspection	1,125.26	911.93	2,037.19	.02 %
Sub Total	16,246.99	28,509.36	44,756.35	.48 %
Special Maintenance, Floods, Washouts, etc.	241,944.02	136,669.59	378,613.61	4.17 %
Total direct expenditures	4,297,658.64	4,775,519.72	9,073,178.36	99.76 %
Maintenance Administration - Headquarters	13,774.91	8,147.35	21,922.26	.24 %
Total for Fiscal Year	4,311,433.55	4,783,667.07	9,095,100.62	100.00 %
Total Miles Maintained	4,554.06	4,625.02		
Average Cost Per Mile (Includes Snow Removal)	$ 946.72	$ 1,034.30		
Average Cost Per Mile (Excludes Snow Removal)	877.45	906.21		

STATE OF NEVADA - DEPARTMENT OF HIGHWAYS

TABLE 29

MAINTENANCE & SNOW REMOVAL COSTS

1918 - 1964

FISCAL PERIOD	SNOW REMOVAL	GENERAL MAINTENANCE	TOTAL	MILEAGE MAINTAINED	AVERAGE COST PER MILE
1918 - 1926	$ 16,862.47	$ 963,132.32	$ 979,994.79		
1927 - 1936	306,626.06	4,670,275.03	4,976,901.09		
1937 - 1946	811,702.44	7,464,889.04	8,276,591.48		
1947 - 1956	2,613,958.78	16,411,246.55	19,025,205.33		
Sub Total (1918 - 1956)	$ 3,749,149.75	$ 29,509,542.94	$ 33,258,692.69		
1957	263,686.02	2,504,661.04	2,768,347.06	4,166.47 Mi.	$ 664.44
1958	430,682.84	2,879,731.76	3,310,414.60	4,303.89 Mi.	769.17
1959	312,084.25	3,150,505.89	3,462,590.14	4,376.21 Mi.	791.23
1960	482,449.72	3,497,714.05	3,980,163.77	4,452.98 Mi.	893.82
1961	310,367.40	3,610,168.69	3,920,536.09	4,487.71 Mi.	873.62
1962	654,463.11	3,957,520.30	4,611,983.41	4,500.80 Mi.	1,024.70
1963	315,461.03	3.995.972.52	4,311,433.55	4,554.06 Mi.	946.72
1964	592,420.49	4,191,246.58	4,783,667.07	4,625.02 Mi.	1,034.30
Sub Total (1957 - 1964)	$ 3,361,614.86	$ 27,787,520.83	$ 31,149,135.69		
TOTAL (1918 - 1964)	$ 7,110,764.61	$ 57,297,063.77	$ 64,407,828.38		